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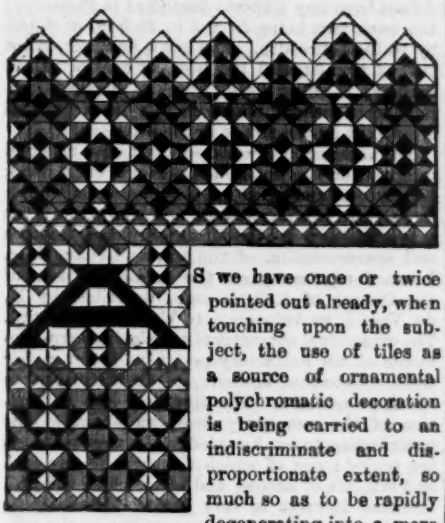
The Use of Ornamental Tiles.



As we have once or twice pointed out already, when touching upon the subject, the use of tiles as a source of ornamental polychromatic decoration is being carried to an indiscriminate and disproportionate extent, so much so as to be rapidly degenerating into a mere piece of commonplace. The employment of tiles as a mural decoration having come into fashion in architecture, has been introduced also into furniture; and in recent exhibitions of furniture-design the difficulty is, often, to find anything that has not a tile in it. This extravagance in the employment of any newly-suggested or revived form of embellishment is one of the tendencies of the present day, or, at least, is more developed at present than it has ever been before, owing to the restless craving for novelty on the part of both artists and the public,—that portion of the public, at least, which employs architectural art. But nearly all sources of decorative treatment have their proper limitations, and inevitably lose in effect by being overworked or misapplied.

The most general and practical use of encaustic tiles is for flooring. Besides forming one of the most indestructible of floors, in resistance to wear (when the material is really good), tiles form almost the only means of introducing ornament of at all an elaborate nature and of a permanent character into floor surfaces. The simpler Geometric designs to be obtained by variously-coloured slabs of material have been realised in marble as often as in tiling, and with much better effect. But the elaboration resulting from the employment of slabs with each its own ornamental design could only be obtained in marble by the costly process of inlay. Tile designs are, in fact, an inlay worked with the materials in a soft state, and capable of easy manipulation and mechanical repetition. Such a resource for producing an effect of richness was sure to be largely made use of, when the mechanical means for its manufacture were perfected, and almost as certain to be to a considerable extent abused.

We have got rid now, certainly, of the notable propensity to blue and buff developments which distinguished the tile designs of the earlier period of the "revival." Combinations in which these two particular tints were supposed to furnish all that the eye could desire would be scouted in most quarters at present as crude and commonplace,—at least, when used in any large quantities. Combinations in which a strong chocolate red is the prevailing element are more popular now, and the value of quiet gray tones has been, to a certain extent, recognised. But we have still foundation for complaint in regard to the raw, crude, and more or less garish effect of a large proportion of our tiled floors. We see this most forcibly illustrated when a church has been restored, and a large portion of the floor has been laid by our Mintons or Maws. The repose which previously characterised the old edifice is gone,—broken into by nothing more than by the new-tiled floor, with its "spick-and-span" look, and its trade-developed patterns. It is to the existence of the "pattern-book" that this de-sanctifying effect is partly to be traced. Designs which have to be mechanically multiplied are made the most of, tabulated and advertised, and pass into decorators' commonplaces. We soon learn to know the most popular ones, and recognise them, not agreeably, in places where we would gladly meet with an individual and special design, suitable to the building,—perhaps designed in relation to the ornamental details of other parts. Admitting the pattern-book, however, as a trade necessity, it is quite possible to get better results than are ordinarily obtained. The average of tile designs run too much in a groove; they are arranged upon certain main types, which seem to recur again and again; and they fail as often from attempting too much in colour as from attempting too little in regard to originality of form. In the matter of colour, some of the German tile-manufacturers show better taste and a better perception of what is suitable for tile-flooring than those of our country. They have largely adopted, for some time past, very quiet neutral tints in working out the majority of their floor-patterns, and thus escape much of the gewgaw effect which we have to complain of in modern English tiled floors. We do not, as a rule, want strong or bright colour for that which is under our feet; only a certain well-considered design, and a sufficient variety of tone; and the bright and strong chromatic treatment, tends to injure the effect of objects of more importance to us than the floor pattern. Above all the "shiny" tiles (glazed), in old restored buildings especially, often destroy all tone and repose, and vulgarise an interior in almost all cases. Such tiles should only be employed in very small quantities, where some peculiar richness and glitter may seem to be called for, practically, as where light is deficient, or architecturally, as perhaps in a vestibule to a lady's boudoir. The most important distinction in the method of working out tile-designs is that between designs in which the division of the tiling into rectangular slabs is emphasized, and that in which it is ignored, and a continuous design formed independently of the jointing. In regard to the latter principle, a large design, occupying a whole floor, has seldom so good an effect as a smaller diaper pattern, and it tends to dwarf the extent of the area in most cases. In general, designs in which the square form of the separate tiles is brought out, are the most suitable to the material, and the manner of putting it together, and have the most truly architectural effect. An arrangement in which two tiles of distinct tone and pattern, or one plain and the other ornamented, are regularly alternated, almost always has a good effect when the combination is suitable in point of colour. An arrangement based on the employment of large square tiles, with smaller ones lozenge-wise at the intersecting angles, is strictly in accordance with practical demands, getting rid as it does of the weak point in tile flooring, the joinings of the sharp angles, which are always the first places to show defects in the laying; it therefore recommends itself to the judgment as well as to the eye. In the designing of more flowing and elaborated patterns, a much larger use might be made than has yet been done of the conventionalised forms of natural leafage, which would be a relief from the constant changes rung upon quatrefoils, circles, and intersecting geometric figures, which have been used, perhaps, in almost every possible combination, so far as form is concerned. But all combinations conveying to the eye the idea of inequality or relief of surface should be studiously avoided; and even the effect of an interlacing design, as of two superimposed patterns, is open to objection, or is very liable to become so in some forms.

One of the causes of the hard, "bran new" appearance imparted to an interior by tiling arises from the absolute smoothness and hard finish of the tile surface, and the consequent want of any of that tone which a rougher texture would impart. In respect to this nothing makes so satisfactory and rich an effect in the way of tile-flooring as the Roman tesselated style, formed by the junction of numerous small self-coloured tesseræ. In this method the innumerable jointings over a large surface give a roughness of texture very satisfactory to the eye, and harmonising much better with architecture (and with furniture or paintings) than the smooth encaustic tile patterns. Even in the actual tile-patterns of the Middle Ages, so far as they exist, we mostly find the component pieces much smaller than the average tiles in use at the present day. The final effect, in the modern system, is sacrificed to ease and economy in laying the tiles. The merits of Rust's "artificial mosaic," in supplying a material with more texture and tone in its surface, have been before touched upon in our columns. In diaper patterns, arranged in real or apparent tesseræ, it is desirable so to arrange the pattern as to mask the fact of its repetition,—in other words, not to show where it begins and ends; this has perhaps never been so well and ingeniously done as in that well-known Roman pattern composed of segments of circles, which has been reproduced in the floor of the Bethnal-green Museum.

The use of wall tiles is, or might be often, as much a matter of sanitary advantage as of architectural embellishment. The ease with which such a work can be kept clean renders it most suitable for the lower portions of walls in staircases and halls, and places where people continually pass and repass. The only distinction between the principles of design for wall-tiles and flooring-tiles is that the former admit, and even seem to demand, a one-sided treatment (so as to form an upright pattern), a treatment which can never satisfactorily be applied to floor-tiles, which ought to show alike in every direction. It is matter for surprise, however, that this principle is so little heeded in the manufacturer's pattern-book designs; where in most instances the patterns specified as wall-tiles might just as well be floor-tiles.

The practice of employing tiles for the attainment of external polychromy has been carried to a certain extent among us, but not always with very happy effect. The same cause—meagreness of texture—comes into operation here, and gives a building much decorated in this manner somewhat of a painted tea-caddy effect. Tiles so introduced should, at all events, be kept in subordinate and not in main surfaces of masonry; in panels under windows, occasionally perhaps in the apex of a gable. But a very little of this class of decoration goes a long way; carrying it at all too far at once weakens the expression of a building. Tiles, however, might be used externally, more often than they are, in combination with cement, with which they would fall in, both practically and architecturally, much better than with brick or stone. Tiles and cement work to much the same thickness, and the two surfaces, both smooth in texture, and both partaking (in such positions) of the nature of a veneer, harmonise well together.

In regard to the application of tiles in furniture, the most proper place for this is in a chimney-piece and grate, in which position tiles are, on every consideration, quite in their right

place. The free introduction of tiles in wooden furniture (sideboards, &c.) must be deprecated; the materials do not harmonise at all; the hard shining brittle tile, and the softer fibrous wood, are materials of so opposite a nature that blending them together satisfactorily is almost out of the question. An exception may be made, perhaps, in regard to ebony, which in its hardness, and the brilliant polish it takes, approaches more to the character of the tile texture; but oak furniture, for instance, is almost invariably spoilt by tile decorations. The class of productions which have been rather absurdly called "art tiles," ought in many of its developments to be rigorously repressed. It has been the excuse for all kinds of vulgarities, absurdities, and primitive and untutored delineations of figures, scenes, and animals of most uncouth shapes, and most unmeaning *motifs*. The very stiff treatment necessary, however, in the use of figure subjects on tiles is not an objection when these are placed at some distance from the eye, and the right use of such tiles would seem to be in panels in external decoration, where they could not be inspected too much in detail, and where their weather-resisting qualities furnish a valid reason for their employment. It is possible, by the use of simple lines and of one or two broad tints only, to produce figure subjects for friezes, &c., of a considerable size, in tiles: this has been done, for instance, in a building in Piccadilly, formerly noticed by us, but the effect in this case (which is not very satisfactory) would have been better if two colours only had been employed for the ground and figures; if the latter, in other words, had been in monochrome. Tile decoration, in whatever way introduced, especially needs to be used with moderation, and so as not to become glaring and over-conspicuous, to the detriment of repose and artistic decorum.

ARCHITECTURAL DISCOVERIES IN PALESTINE.

¶ The most extensive contribution which has been made, at one time, to our knowledge of the archæology and ancient architecture of Palestine, since the publication of the Comte de Vogüé's work on the churches of the Holy Land, is published in the recent quarterly report of the Palestine Exploration Fund. We speak of archæology *and* of ancient architecture. For we think, as we have before now had occasion to remark, that the former word has of late received so steady an extension of application as to encroach on other more distinct provinces of ancient art. Archæology, according to the plain sense of the word, is the knowledge or doctrine of the Archaic, or of the beginnings of things. It deals properly with the pre-historic; and under that term we include not the history that is written in books alone. Nor do we even limit the term to written monuments; to the deeply incised hieroglyphics of Egypt, or to the equally durable, though humbler, legends of the Assyrian *terra-cottas*. We refer to the visible history of architectural sequence and development. We decline to term such a work as Stuart's Athens an archæological book. When we can trace the development of an order or of a style from its first rude origin to the period of its transition, or of its final disappearance, we have a chapter in the history of architecture. The whole theory of that art, whenever the time arrives for its fit presentation to the world, will consist of, or rather will be a deduction from, a series of such chapters. Whenever, therefore, an architectural detail, before unknown, is measured, drawn, published, and added to our general stock of professional information, we have a contribution to the general history of architecture; the value of which, it may be, far exceeds the estimate of the discoverer. And when by any such discovery, or group or series of such discoveries, we can remove an individual building from the position of an archæological to that of an architectural relic, we throw a new light on either the chronological, or the local, development of architectural principles.

The publication to which, in the first instance, we have referred, is that of a small but accurate plan of the rock contours of the site of Jerusalem. These have been ascertained from more than 200 distinct excavations made for the foundations of buildings, combined with observations of rock where it exists in bold scarps, or where it otherwise comes to the surface, and with other information not previously given to the public. Before giving our readers some brief account of a plan which must do much to remove many questions from the shadowy region of opinion and controversy to the surer ground of illustrated history, we have, however, to speak of those discoveries made within the last few months by Lieutenant Conder, R.E., and his little command, which are also discussed in the report, and which are of a directly architectural character.

The first of these is to be found in the remains of a large town, situated on a hill about ten or twelve miles west of Nablus, which, though in a fine and commanding position, has hitherto been entirely unknown. It is not, of course, laid down on any map. The name, as translated from the Arabic of the inhabitants, is Dayr Asruhr. The ruins cover a square mile of area, and appear to have been surrounded by a wall. The remains of a large building, facing the cardinal points, are found at the north-west corner of the town. In the north wall is yet *in situ* a fine solid semicircular arch, consisting of thirteen voussoirs, with a span of 14 ft. The height of the courses of masonry is irregular, and many stones are of great length in proportion to their height; the former dimension varying from 18 in. to 63 in., and the latter from 23 in. to 41 in. All have been worked with a well-finished marginal draft, of from 2 in. to 3½ in. broad, the face of the stone being left perfectly plain, and the draft so shallow as in many places to have become indistinguishable from the crumbling of the stone with age. Together with the semicircular arch, and the fine finish of the work, the flat lintels and Classic mouldings of the doors, and the unusual proportions of the building, have led Lieutenant Conder to attribute to it a Herodian date. The work differs materially from the coarser rustic work of the Crusaders, as it is to be identified at Athlit and Cæsarea. We shall look with interest for the publication of the plans and drawings of Dayr Asruhr, and entertain the hope that positive information as to the structural and decorative art of a specified period in Palestine may thus be added to our knowledge.

We refer our readers to the report of Lieut. Conder, in the publication we have cited, for further details of this town, and of the eleven other sites, only two of which were previously known, of Crusading, Greek, and Jewish churches, tombs, temples, and other buildings, which he has surveyed in detail. But keeping to the question of distinct architectural style, illustrated by evidence of date, and thus regarding the light that it sheds on the architectural history of Palestine, we must say a few words as to the monastery of Dayr Kaláah, another of the points recently surveyed.

This important ruin is shown on Vandevelde's map, although no descriptive notice of it is to be found. It stands on the summit of a precipitous hill, being protected on three sides by deep and rugged ravines; while on the east, quarries are excavated so as to form a kind of moat behind the building. A narrow path leads up to it from a little plain on the west, where the lands cultivated by the monks were probably situated. This path is commanded by a turret built on projecting brackets, so as to form a kind of machicouli. A square projection, with its floor some 12 ft. above the level of the main part of the monastery, forms an outwork on the less protected side.

We pass over the details of the plan,—the central hall of 80 ft. in length, the chapel on the north, the dormitories on the other side, the cloisters, the refectory, the general resemblance to the arrangement of conventual building so well known in Europe,—to mention the architectural feature which is of such novel and important interest with regard to date. This is the cornice of the inside of the east chapel wall, which remains almost intact, although much worn by weather. The special peculiarity is the deflection of this cornice to follow the semicircular arch of a window or a door, a feature which is shown in the illustrations of Sir Gardner Wilkinson's "Dalmatia," to exist in the peristyle of the *atrium* of Diocletian's palace at Spalatro, and in the "Golden Gateway" at the same spot. The same feature occurs in the "Golden Gateway" in the great fortress-wall of the "Noble Sanctuary" at Jerusalem; and, in a slightly modified form (combined with a spandrel decoration) in the double "Huldah" gate of the same inclosure. From this circumstance an argument has been drawn as to the early date of the Jerusalem Golden Gateway. The details of workmanship and ornamentation in this structure are similar to those of the Dayr Kaláah in all respects but one, namely, the Cross appears as an ornament in every possible place in the latter. The semicircular arches are built with keystones, as are some of those at Spalatro; but the doors are all surmounted by flat lintels, on which the Cross is cut in low relief. Generally this symbol is placed on a tablet, but in one case it stands on three hemispheres—the old conventional mode of representing "Mount Calvary." The ashlar work of the whole building is finely proportioned, and the joints are beautifully laid. The stones are drafted, on the exterior walls, but flush, on the interior. The character of the drafted work differs from any hitherto described in Palestine; the sunk part being from 2 in. to 3 in. in depth by 10 in. in breadth. The draft, however, is not always regular, and the boss, or central raised surface, is often very roughly finished. A number of masons' marks ,said to be of unusual type\ exist on the stones in the interior.

The architectural world will look with no small interest for the detailed drawings of a work hitherto unknown, although existing within a day's journey of Jerusalem, and bearing so close a resemblance to the much-disputed features and ornamentation of the famous Golden Gate. Lieut. Conder compares the details to those of the Church of Kalb Louseh, described by M. de Vogüé as belonging to the sixth century. The conventual character of the plan and arrangements of the monastery points to a not earlier date. As to this, however, we do not profess to speak *ex cathedrâ*. The discovery and delineation of the monastery form an entirely new contribution to our knowledge of a very interesting period; one of which the remains are rare and difficult of access, and as to which the professional interest is very great. Whatever be the theory advocated by any writer on the subject hitherto, the one great object is truth. We have now before us, in the ruined monastery, a witness who comes before the tribunal of Art unexpectedly. He has to be examined and cross-examined. Though dumb, he is yet eloquent. One thing is certain as to his testimony. However long a time it may take us fully to understand it, it is at all events absolutely true. It is given with no bias, with no *arrière pensée*. Whether it supports the theory of those who attribute the Golden Gateway to the time of Constantine, to that of Julian, or to that of Justinian, is a conclusion that remains to be distinctly ascertained. But of the architectural and historic value of the discovery there can be but one opinion.

The same quarterly periodical that contains the reports on the rock contours of Jerusalem, and on the previously unexplored country between that city and the northern frontier of Palestine, includes also some particulars of interest as to the Dome of the Rock; the beautiful building in the midst of the Noble Sanctuary, which has not escaped the fate of being the subject of contention almost as fierce, with regard to its character and history, as that which has raged as to the Holy Sepulchre. The roof of the Dome of the Rock has been under repair, and Cufic writing has been found upon the rafters. The writing refers to the repairs of the dome. The date is illegible; but a general restoration of the mosques and masjids of the Caliphate is known to have taken place in the year 301 of the Hejira, A.D. 913, and it is very probable that this was the occasion, as the contemporary name of the Caliph El Muktader Billah occurs on the rafters. The date, being only that of a restoration, is not of any conclusive value. But the discovery of a very old carved wooden cornice still running round the building, in the space between the ceiling and roof of the outer corridor, on the inner wall of the latter, just above the ceiling, is significant. This discovery has been communicated by Dr. Chaplin, of Jerusalem; a gentleman to whose professional skill and unwearied kindness all the officers who have been engaged on the Ordnance Survey of Palestine bear the highest testimony. Dr. Chaplin is also a Hebrew scholar, and well versed in the local archæology of Jerusalem: so that his opinions are, *a priori*, deserving of respect. His inference from the discovery of the cornice confirms the opinion which he has formed from the perusal of the Arabian historians, to the effect that the outer corridor which now surrounds the Dome of the Rock is a comparatively late addition, and forms no part of the original building.

A further contribution to our definite knowledge of this most interesting structure is contained in Lieutenant Conder's report. In "The

Holy Sepulchre and the Temple at Jerusalem," p. 21, occurs the paragraph, in speaking of the architectural details of the Dome of the Rock,—"The first thing to be observed is, that the pillars are mounted on stools or sub-bases, as in the octagon building at Spalatro, and as we find them in the buildings of the next century at Salonica and Constantinople, but as they ceased to be in Justinian's time, and afterwards. The capitals are of a simple Corinthian order of Diocletian's day, which had disappeared long before Justinian's reign."

In the repairs now going on in the Dome, however, it has become evident that the details in question at the base of the columns are not stools or sub-bases, but merely slabs of marble built round each column, so as to conceal its real base. These have now been removed from two of the pillars in the octagon, and prove to have concealed a base, apparently not originally belonging to the shafts, as a couple of bands of lead, giving a thickness of 1¼ in., are introduced between, no doubt with a view of equalising the heights of columns of different sizes. To this may be added the remark that the twelve columns in the inner circle of the Kubbet es Sakhrah (Dome of the Rock) are crowned by capitals of no less than eleven distinct patterns, varying not only in design and elevation, in height, and in diameter, but, what is more important than all, in proportion. Thus in one instance we have a squat capital, with volutes, of which the height from the top of the shaft to that of the capital is little more than half the diameter of the latter, measured on the square. In another instance, where an ornament something like the fruit of a passion-flower is introduced, the height of the capital is very nearly equal to its diameter. In a third instance, the neck of the capital is only equal to seven-eighths the diameter of the column on which it stands, and from which it is separated by a projecting moulding. Thus it is more than likely that the materials of this building have been taken from the remains of preceding structures, probably of varying dates.

Thus much as to architecture proper. We are pronouncing no judgment. We are arguing no case. But we think it proper to call the attention of the architectural world to the fact that entirely new information is now being collected on a subject which has been debated with the keenest interest; and that any future theory as to the nature and origin of the beautiful building, which the Moslems treat with so much reverence, must comprehend and explain these facts. It is possible,—it is even probable,—that they are far from being the last that will come to light. The Ordnance survey of Palestine now extends over 1,800 square miles, or three-elevenths of the whole area of the country. Any or every portion of the unexplored ground may be as full of interest as that which has now been added to our knowledge.

The question of the rock contours is one that relates rather to engineering than to architecture. Still it is one of primary and controlling importance as to the possible topography of ancient Jerusalem. When we say the possible topography, we do not mean what any one may imagine to be possible, but what is or is not rigidly excluded from being intelligently supposed ever to have existed. It requires the mind to be fully impressed with two facts in order to see the full difficulty of the question. The rock on which Jerusalem was built is now covered with from 25 ft. to 120 ft. of *débris*. Thus the contours of the present surface, which are shown on the Ordnance map of the city on the scale of $\frac{1}{2500}$, which was completed by Major Wilson in 1865, give no definite information as to the original conformation of the ground. And it is recorded in history that Jerusalem was so utterly obliterated by the Roman governor Turnus Rufus, who actually drove the plough over its site, that no one could have imagined that it had ever been covered by a city. The first point, ascertained in the first instance by Captain Warren, enables us fully to believe the second assertion.

The editors of the Quarterly Statement pay a high compliment to the "energetic enthusiasm" of Lieutenant Conder in sending home, as a "vacation task," the report on the great temple at Baalbec, which we published in a recent number. We by no means quarrel with them on that score. But we think it is much more noteworthy that this officer, while executing with his too limited party his official duty of the survey of the country at the rate and with the accuracy that are stated in the report, has found means to present the Committee and the public, without the cost of a single shilling, with a map of the site of the city, of such considerable value. Nearly the whole efforts of the committee, from the commencement of 1867 to the close of 1870, were devoted to the mining and subterranean investigation of Jerusalem. A certain number of rock levels were thus obtained. But very little tangible information on this important point has hitherto been available to the public. Lieutenant Conder has availed himself of the results of the experience of Mr. Schick, the imperial German architect at Jerusalem, a gentleman who has always shown a disinterested willingness to give to the public the valuable information that he has collected in the pursuit of his profession. Mr. Schick has furnished some 200 observations of the depth at which rock was arrived at in digging for foundations beneath the present surface of the city. From these, combined with the previous observations of Captain Warren, Lieutenant Conder has constructed a contour plan of the rock surface of the entire area of the city, a reduced copy of which, on the scale of 10,000 to one, accompanies his report on the subject. The comparison of this plan, with the contoured plan of the surface of the earth and rubbish visible to the eye, which forms the apparent site of the city, is instructive in no ordinary degree.

If this little plan be looked at as a key to the account of the city given by Josephus, it will become at once apparent how much of theory and of contest will be now remitted to the *limbo* of Dante. We should warn our readers, however, against the misleading character of Whiston's translation. Only the Greek Josephus is trustworthy. A little explanatory word is often glided in by the translator which entirely reverses the meaning of the historian. Clearly defined by the rock contours, we see the two hills on which the city stood,—the area of the southern and larger one being divided by the present city wall, but the former extent of the fortifications being indicated by a rocky scarp. There is the deep ravine between the two hills, known by the puzzling name of the Tyropeon valley. There is the broader and shallower depression, running in a north-westerly direction, between the Temple Hill and the northern "gibbous" Hill called AKRA, the summit of which was lowered by the Asamonean princes after the capture of the Greek fortification on the top, and the expulsion of the foreign garrison. We cannot now find space to tell the history of this hill, which we possess in very considerable detail, from the time when Solomon built on its summit the stronghold called Mello (which a comparison of the Septuagint with the original of the Books of Samuel and of Kings, identifies with the Akra of the Seleucidæ and the Maccabees), to that when Constantine mistook an ancient sepulchre, possibly that of the great high priest Hyrcanus, but more probably of earlier date than the capture of the city by David, for that of a more illustrious Entombment. Later we may hope to find occasion to read the lesson that is writ in such plain text on these unveiled rocks. All we can now say is that a cloud of mystery is lifted and lifting from the site, and express our regret that any other interest should be allowed to interfere with that modest addition to the number of the little party of Royal Engineers that would enable the officer in command to double the actual rate of progress, and to complete the survey of Palestine in the course of the year 1875.

THE PRESERVATION AND RESTORATION OF PAINTINGS IN OIL.

A RECENT number of the "Proceedings of the Industrial Society of Mulhouse," contains an interesting report by Professor Dr. Göppelsrœder, on the method of restoring paintings in oil discovered by Professor Von Pettenkofer, of Munich, and described in a work entitled, "*Ueber Oelfarbe und Conservirung der Gemældegalerien durch das Regenerationsverfahren, &c.*," a second edition of which appeared in the course of last year. The microscopic researches of Herr Radlkofer have shown that the deterioration of the paintings in the new Pinakothek (Picture Gallery), at Munich, and in the galleries at the château of Schliessheim were not, as very generally supposed, the direct or indirect effects of *organic* agency. It remained for Professor Von Pettenkofer to detect the true causes of the evil, and to devise suitable remedies. This he has accomplished by the adoption of certain simple but efficacious methods of restoring, from time to time, the *normal optical* condition of the varnishes and oils used in the pictures. His views, which have been carried out with marked success in the art-galleries, at Munich, are stated to have been confirmed by the experience of all those who, like Dr. Göppelsrœder, have devoted the requisite time and study to the art of picture-restoration. They are summarised as follows:—It is obvious that oil-colours, permanent as they may be, chemically speaking, can only preserve their exact original tints, and their pristine brilliancy, so long as the drying oil, with which they are intermixed, and in which their particles are, so to speak, suspended, retains its *optical* properties unchanged. This will always depend, more or less, upon the chemical constitution of the oil.

The most important constituent in the oils used by artists is *linolein*. Unfortunately, this substance cannot be obtained pure. Painters are obliged to have recourse to linseed-oil, which contains about 80 per cent. of *linolein*, or to poppy-oil, which contains 75 per cent. only. The *linolein*, when the oil is sufficiently pure, solidifies under the oxidising influence of the atmosphere, without loss of bulk, but with an increment of about 10 per cent. in weight. The hard transparent substance thus formed, having a texture something like that of caoutchouc, encloses the particles of pigment, and the other substances contained in the oil. And it is because *linolein* acquires a certain uniform consistency under all ordinary variations of atmospheric temperature that the patches of colour, after drying, are not displaced either by moderate pressure or by the application of fat or ethereal oils or varnishes.

But, as molecular and atomic movements are unceasingly occurring in the world of matter, it follows that paintings are constantly subject to certain chemical and physical changes. These changes are of more frequent occurrence in the oil than in the colouring matters incorporated therewith, so that the proportion of oil to be used in the preparation of a good colour from any given pigment, is a consideration of no small importance. The experiments made by Herr Würm, at Munich, have shown that the specific gravity of a pigment affords no clue to its powers of absorbing oil. As a rule, it may be laid down that pigments that take up least oil are those that change and crack most.

The oxidised *linolein*, or *linoxyn*, as it is called, becomes harder and more brittle in proportion as the fatty and non-drying constituents of the oil are removed by the application of ether or ethereal oils. Paintings absorb moisture from the atmosphere, and part with it again by evaporation. In course of time, after these alternate processes of absorption or evaporation have been repeated sufficiently often, a coat of any colour laid on by the artist loses its original appearance, and no longer produces the same *optical* effects.

Respecting the methods in use up to the time of Herr Von Pettenkofer's discovery, it should be remembered that it has been customary for the artist himself to varnish the picture when finished, so that the minute pores in its surface, which were filled with oil whilst the paint was wet, and afterwards contained air only, might be stopped with varnish. For this purpose, resinous varnishes, *i.e.*, solutions of resins or turpentine in fat or drying oils, were employed. The last, more especially, are very hazardous to use. After a time, the varnish perishes, gets mouldy, and no longer admits of the free passage of the rays of light. It has been customary then to add fresh varnish; and to repeat the process from time to time until the distinctness of the picture is more or less completely destroyed. To repair the latter evil, the only method has been to remove the old varnish; to retouch more or less freely with colour; and then to varnish afresh. There is no thoroughly effectual mode of removing the old coats of varnish; and the fresh application of oil impairs the brilliancy of the picture, imparting to it a deeper and yellower tone. But, it may be asked, what are we to do? If we wet the resinous varnish and permit the water to evaporate, the varnish cracks and dulls. We may restore the transparency temporarily by soaking the picture, so that the pores of the canvas become filled with water. The water, which thus penetrates into the pores, refracts and reflects the light more powerfully than the air, and withal has a certain action on the varnish. But the restorative effects only last until the moisture has evaporated. Moreover, by evaporating even distilled water on varnish we produce a stain; and, if the experiment be

repeated sufficiently often, these stains assume a white appearance resembling chalk.

At the château of Schleissheim, Professor von Pettenkofer made a series of very interesting observations on the condition of the paintings according as they were hung on walls cased with wood or not so cased, or in the vicinity or otherwise of a window. The pictures resting on wood were in a good state of preservation, and the same was observable of the wood on which their canvas was stretched, and of the paper labels affixed to them. The Professor observed that the repeated deposition and evaporation of atmospheric moisture on the surfaces of the pictures destroyed the cohesiveness of the varnish. He succeeded in restoring molecular cohesion in the latter by exposing it to the fumes of proof-spirit intermingled with the atmospheric air, at first in small, and afterwards in larger quantities. In the course of forty-eight hours, the varnish thus treated absorbs about 80 per cent. of its weight of alcohol, which is speedily evaporated again. The resinous matter in the varnish is moistened thereby, and becomes absorbed into the canvas, re-establishing the cohesion between the colouring matters and itself. This softening of the varnish is much less injurious to the pictures than fresh varnish laid on with a brush, by which particles of colour may sometimes be displaced.

Professor von Pettenkofer's mode of operation is extremely simple. He makes a preliminary essay on the picture, with the aid of a small cylindrical paper box. This is well glued at the joints, so as to be air-tight. The bottom of the box inside is covered with a piece of flannel steeped in proof-spirit. The box is turned upside down with its mouth resting on the face of the picture, which is previously wetted. The portion thus restored becomes a standard for the rest of the picture. For the restoration of the whole surface a wooden chest is used, the bottom of which is covered inside with alcoholized flannel. The picture is fastened to the inside of the lid, so as to rest horizontally, face downwards, when the box is shut.

The Professor records some extraordinary instances of colour-renovation; notably in the case of a green, which, by the action of the atmosphere and time, had become a greyish blue, as if it had been compounded of blue and yellow and the latter had disappeared.

He has not, however, stopped short at this point. He has shown us also how to treat pictures in which the resinous matter is insufficient in quantity to fill the cracks when moistened; how to treat pictures when the resin is present in excess; how to deal with pictures covered with alternate coats of resinous varnish and oil varnish, which are differently affected by exposure to an admixture of atmospheric air and alcoholic vapour; lastly, how we may retard the re-appearance of molecular disintegration in pictures thus renovated.

He also describes another method of restoration, to be used alone or in conjunction with the above, viz., the treatment of the picture with the drug known as *balsam of copaiba*, which dries very slowly, and in composition resembles certain resinous varnishes, such as the solutions of gum-mastich, or dammara resin, in spirits of turpentine.

Balsam of copaiba fulfils very well the *optical* conditions of ordinary varnishes, and it may be applied to particular portions, only, of a picture without rendering them unduly conspicuous. It fills the pores in the coloured surface, and the desired effect may frequently be obtained by merely rubbing it on at the back. In the case of either mode of treatment, it is often necessary to repeat the operation more than once, and the process will sometimes render apparent cracks heretofore unperceived. In these cases it will generally be sufficient to lay on a small quantity of copaiba, and to expose to the vapour of alcohol.

If the resinous matter be present in excess, and particularly if the picture be very yellow in tone, there is unfortunately no way of removing the surplus varnish entirely, as it is not only superposed but incorporated with the colour. The picture should first be restored as above described, so as to bring out the colour, and give a more homogeneous consistency to the varnish. Some of the excess may then be removed by rubbing with the finger dipped in powdered colophane, or dissolved away with spirits of turpentine. To fill the resinous matter well into the pores, wash first with water, then with spirits of turpentine, and lastly expose the parts to the vapour of alcohol.

If the picture is covered with oil as well as resinous varnish, the latter only will absorb the alcohol, and so become moistened, and soak in; the oil remains on the surface, rendering the latter harsh and furrowed. In such cases, the picture should be treated with balsam of copaiba, and subjected to a heavy pressure to facilitate absorption.

A picture renovated with balsam of copaiba will much longer withstand the effects of atmospheric humidity, than otherwise it would. Our space will not permit us to follow out the very interesting observations made by Professor Von Pettinkofer in the new Pinakothek at Munich, where molecular disintegration was found to have made its appearance in 52 per cent. of the pictures hung in rooms with a north aspect, and in 10 per cent. only of those in rooms facing south.

We may, however, observe, in conclusion, that in every art-gallery it is indispensable to avoid the deposition of moisture on the surface of the pictures, and that those most valued on account of age should be further protected by *glazing*. With all pictures on canvas it would be desirable to coat the backs with balsam of copaiba. With this precaution the cracks which form in course of time would close themselves. With the assistance of M. Stückleberg, a distinguished artist at Bâle, and M. Falksen, curator of the museum in the same city, Dr. Göppelsroeder tried these methods, it is stated, with perfect success.

The mode of operation adopted by these gentlemen was as follows:—A china bowl, containing proof spirit, was placed in an iron or copper brazier. The latter was heated, so that the fumes of the alcohol passed off rapidly. The pictures, having been previously treated with copaiba, where it was deemed necessary, were suspended horizontally over the mouth of the bowl, and as close to it as possible; every portion of their surfaces, in turn, being brought into contact with the rising fumes. The results are described as eminently satisfactory. The way in which the original colours were brought out on oil sketches that had never been varnished and were much faded with age, is stated to have been most remarkable.

MUSEUMS OF ART.

At the Hanley School of Art, on Monday evening last, Mr. Henry Cole, C.B., who presided, made an address, in which he traced the origin and progress of the Science and Art Department, the work of the late Prince Consort. In the course of it, Mr. Cole said people were still apt to look at museums as mere collections of "things rare and curious—things for learned people only, for rich people only, for *dilettanti* only. The Prince Consort and his followers looked at them from a different point of view—the point of view of science and art applied to productive industry. What did the architect do who wanted to learn his profession? He looked at buildings. What did Flaxman do when he applied himself to pottery? He studied Greek pottery. What did Herbert Minton do to enable his manufactory to compete successfully with Sèvres? He collected and studied the masterpieces of Sèvres. Why was Mr. Phillips, the jeweller, trusted to set jewels with good taste? Because he studied the ancient and Mediæval models. What gave Pugin his reputation for Gothic metal work but his study of Mediæval models? What had created a trade in majolica in this country but the Soulages collection? What had given the Craces, and Jackson & Grahams, and Gillows, and Hollands their reputation for furniture, but their knowledge of ancient examples? It was simple, savage ignorance and priggish pedantry not to recognise the absolute necessity for examples of art easily consultable by the public, who were consumers, by the manufacturers, who were producers, and by artists and artizans, who were students. Where were they to consult them if not in public museums? Why was the Frenchman more apt at industrial art than the Englishman? Because for a century he had had his free museums in Paris and every other large town. And public museums were necessary for science as well as art. Collections of diagrams, of educational apparatus, and of specimens of natural history were indispensable to the managers of schools and teachers. Where was there any collection except in the South Kensington Museum? Why did the Admiralty have a museum of the models of ships? Would mechanical science be in its present state if our engineers could not consult the example of their predecessors. The fact was, that if museums were not educational they were of very limited value.

Mr. Cole afterwards uttered an indignant protest against the threatened abandonment of the South Kensington Museum to the irresponsible trustees of the British Museum, and discussed—as we have already done—the different spirit which at present actuates the management of the two institutions.

The Hanley school, under Mr. A. A. Bradbury, is said to be in a flourishing condition.

THE NEW HAMPSHIRE ASSIZE COURTS.

The new assize courts in Winchester, erected from the designs of Mr. T. H. Wyatt, have been opened. The old hall is preserved. The corridor of the new building is 36 ft. long, 20 ft. wide, and 20 ft. high. On either side, at its western end, are stone staircases leading to the basement. Both these apartments will be paved with Forest of Dean stone, interspersed with Portland stone and Dumfries stone, giving a pattern with three tints. Entering the court on the right, we find the Nisi Prius chamber to be 55 ft. long, 30 ft. wide, and 31 ft. high, whilst the Crown Court (on the left of the corridor) is of a similar measurement, with the exception of a greater length by 2 ft. Both chambers will be illuminated with sunlight burners during evening sittings, and during the day four three-light windows in their outer walls, and a four-light one in their eastern walls, provide all that will be required in the matter of light. The judicial bench, at the east end, is in the form of a canopied dais, with the Royal arms carved in woodwork overhead. The Crown Court, on its northern side, is provided with a gallery for the accommodation of the grand jury, and this is approached by a staircase leading from their own room in the basement. The judges' consulting-room is a suitable apartment occupying the centre of the building. The Grand Jury Chamber has a measurement of 31 ft. 3 in., by a width of 18 ft., and is, with most of the other rooms in this story, 14 ft. high. The hot-water heating apparatus was supplied by Mr. Haden, of Trowbridge.

Outwardly, the building, which is composed of flints, with Bath stone dressings, presents three stories to view, relieved by Tudor windows. The measurement of the whole is 92 ft. from north to south, 60 ft. from east to west, and about 60 ft. high. On the north side of the building there is a small turret annexe, measuring 13 ft. by 35 ft. 6 in. The clerk of the peace and his staff are located, as before, in the basement; and the county surveyor is relegated to the garret.

Mr. Tookey is the clerk of works, and Mr. Houghton the chief foreman.

The cost is estimated at about 30,000*l*. The carving work, both in wood and stone, has been executed by Messrs. Broad, of Kennington. The gasfittings are by Mr. Strode, of London. The plastering has been done by Mr. Sealey, of Fulflood. The whole works were undertaken by Messrs. Hill & Sons, of London, contractors.

ARCHITECTURE, CONSTRUCTION, AND SANITARY ARRANGEMENTS AT THE COMING INTERNATIONAL EXHIBITION.

We have already mentioned that one of the classes in the next Exhibition will be civil engineering and architecture. But the matter so immediately interests a large number of our readers that we return to it, and hope the information will not be disregarded. The class will be divided into the following sections:—

a. Civil engineering, architectural and building contrivances.
b. Sanitary apparatus and constructions.
c. Cement and plaster work.

Exhibitors who may wish to show new methods of construction in actual operation during the Exhibition, will (with the committee's approval) be allotted space in the Western Annexe, whereon to build or arrange, in view of visitors. In the same annexe will be shown specimens of dwellings for the industrial classes, which her Majesty's Commissioners are desirous of obtaining, if possible, from all parts of the world. It is also in contemplation to obtain a collection of diagrams of ancient and modern buildings of all countries, and the co-operation and assistance of all interested is invited. Another class of the 1874 Exhibition will be,—"Heating by all methods and all kinds of fuel"; and in con-

nexion with this class the Society of Arts have already announced offers of prizes. Intending exhibitors should apply for special particulars at once. This class ought to be the great feature of the year.

TESTIMONIAL TO MR. P. CUNLIFFE OWEN.

We have already mentioned and applauded the preparation of a testimonial by English exhibitors at Vienna intended for Mr. P. C. Owen, the secretary of her Majesty's Commissioners. The presentation took place at a dinner given on Tuesday evening last, whereat Mr. Colin Minton Campbell presided. Mr. John Head, of the Orwell Works, Ipswich, has acted as secretary of the fund. The testimonial consists of a silver dessert service by Elkington and a purse of 1,300 guineas. The dessert service bore the following inscription:—"To Philip Cunliffe Owen, Esq., this silver dessert service and a purse of 1,300 guineas are presented by 275 British Exhibitors at the Vienna Universal Exhibition, as a small token of their esteem and regard, and in remembrance of his unwearied exertions in their behalf while Secretary of Her Majesty's Royal Commission. October, 1873." At the same time, a set of very artistic Danish jewelry, in pearls and wrought gold work after Runic models, was presented to Mrs. Owen, "by a large number of exhibitors and friends at the Vienna Universal Exhibition of 1873, as a small token of their esteem and regard, and in remembrance of her many acts of disinterested kindness."

THE MARGATE DRAINAGE COMPETITION.

The applications from gentlemen who are anxious to have their names placed on the select list of ten competitors for the above-mentioned works were opened at the meeting of the Corporation on Tuesday last. Altogether there were fifty-three applications, of which a large proportion of course came from the metropolis; but the provinces were also well represented: engineers residing at Liverpool, Hereford, Bradford, Warwick, Doncaster, Gateshead, Wigan, Clifton, Eastbourne, Dorking, Sheffield, and many other towns were among the applicants, and one hailed from Cork.

The list comprised many men of mark in the profession, and its perusal elicited the observation thatalthough engineers of repute hesitate to trust themselves to the broken waters of an unlimited competition, yet the system of limited and select competition seems not in disfavour among the profession generally. The reading of the various applications occupied the town clerk two hours, and upon his resuming his seat the council adjourned without debate until this Friday (October 24th), when the applications will be further considered, and the work of selection will commence.

WISBEACH COTTAGE HOSPITAL.

The North Cambridgeshire cottage hospital, the opening of which by its benevolent foundress, Miss M. E. Trafford-Southwell, of Honington Hall, Grantham, was announced by us last week, has its main entrance through an archway, 27 ft. high, with stone dressings and carved capitals. The gates are of pitch-pine, with gilt iron worked. The porter's lodge is on the west side of this gateway. The main building is about 36 ft. high, and there is a tower and spirelet on the north-east side, 60 ft. in height. This serves as an entrance-hall. The buildings have somewhat of a Gothic character; they are of white brick and stone, relieved by ornamental red brick bindings and fret-work. Within the hospital accommodation is provided for sixteen beds. The entrance-hall and passages are laid with Maw's encaustic tiles. The committee room stands on the left side of the hall, and is 16 ft. by 15 ft. The matron's room is 15 ft. by 14 ft. Adjoining it is a store-room 10 ft. by 8 ft. 6 in. The operating-room is 16 ft. by 14 ft. 9 in. There is a sick ward upon the ground floor; it measures 37 ft. by 18 ft. and contains six beds. Between each bed a moveable folding-screen is placed, decorated with a variety of pictures. Moule's portable earth-closets are provided. The ward is lighted with five windows, which have glass louvre ventilators, and contain two large stores. Adjoining is a bath-room, 10 ft. 3 in. by 7 ft., which is provided with hot and cold water. There is a special ward 13 ft. 3 in. by 13 ft., which it is intended to reserve for special cases. There is a kitchen 20 ft. square, and a scullery, 14 ft. by 11 ft., well provided with water. A dispensary, at the rear of the special ward, is fitted up with pitch-pine fittings. On the upper floor stand the nurses' rooms and a sick-ward, corresponding to the one on the ground-floor, two occasional wards (for isolated cases), two special wards (for persons able to pay for their maintenance), a bath-room, and a day-room. The whole of the rooms throughout the buildings are of the uniform height of 13 ft., and the staircases are of stone. The surgeon's residence is situated on the south side of the ground. Around the buildings the grounds are laid out with grass-plots and flower-beds. The whole of the buildings of the hospital are lighted by gas. A good supply of rain and Marham water is carried to all parts of the building. Everything has been done to render the sanitary state of the hospital complete, though the sewerage arrangements are as yet of a temporary nature (pending the contemplated sewage works). The ventilation is on the same system as is adopted in St. Thomas's Hospital, London. Messrs. Adams & Son, of Wisbeach and Lynn, were the architects; and Messrs. J. & M. Challan, of Grantham, the builders. The contract price for the building was 3,264*l*.

THE BRIGHTON SCHOOL BOARD SCHOOLS.

These schools stand on a plot of ground 492 ft. long by 51 ft. broad; one end of which faces Sussex-street, where the boys' school stands; the other faces Richmond-street, which is devoted to the girls' and infants' schools. In the centre are the playgrounds. The fall in the ground in each street is so great (being some 9 ft. or 10 ft.) that a play-shed 73 ft. by 20 ft. has been provided under each school, having open archways along the whole length of one side of the building. These, besides being an important addition to the play-grounds, have the advantage of being especially suitable for wet weather. The boys' school is L shaped, and is 93 ft. long by 20 ft. wide by 19 ft. 6 in. high to the ceiling, and gives about 13 ft. superficial area and 156 ft. cube of air to each child. Three class-rooms, each 20 ft. by 17 ft., and 17 ft. 6 in. high, open into the school-room. There are five classes in the school-room,—two for forty children each, two for twenty-four children each, and one for thirty-two children. Each class-room has accommodation for thirty-two children, giving a total of 250 in each school. Great attention has been paid to the choice and arrangements of the desks, both in the school-rooms and class-rooms. The desks are those known as "Moss's Patent." They are arranged in pairs, with a gangway between each pair, so that the master can have direct communication with any child, and any child can leave his place without disturbing the others. The girls' school is the same in all particulars as the boys. The infants' school is 40 ft. by 40 ft. 9 in., and 26 ft. high, and has a class-room and nursery opening into it, each 20 ft. square. The galleries in the school-room and nursery are adapted for infants of different ages, and the class-room will be fitted up with low desks. A room is provided in each department for the masters and mistresses. The schools were designed for 250 boys, 250 girls, and 250 infants; but the accommodation is slightly in excess of these numbers. The school-rooms and class-rooms are heated by open fireplaces, with air-chambers at the bottom and back of each grate, supplied with air from the outside, through air-tight ducts, of sizes calculated to the cubical contents of the different rooms. The warmed fresh air is admitted into the different rooms through covered ventilators. For the escape of foul-air ample openings are provided in the ceilings communicating by iron ventilating pipes with foul-air shafts in chimney stacks. The windows have been arranged with regard to ventilation. They all open, and the upper sashes inwardly like hospital windows. Round shoulders, defective sight, and other evils, are attributed to the bad arrangement and improper construction of desks and seats in schools. There is no doubt that one of the most important elements is that a school should be properly arranged, lighted, warmed, and ventilated: in fact, no teachers can perform their work thoroughly unless this be the case.

The buildings are Gothic, and are necessarily simple and plain; an endeavour has been made, however, to give them a character suitable to their object and requirements, bearing in mind the neighbourhood, site, and the strictest economy, and relying on the simplest and cheapest means to obtain common-sense buildings. The outside is of stock brickwork, with a few red bands and patterns constructively used. The stonework used is Horsham stone. The roofs are slated. Inside the school-rooms have a cement dado 5 ft. from the floor, and the walls above the roof are painted, the only effect aimed at being in the colouring.

The work has been carried out by Messrs. Bridgman, Nuthall, & Co., of London, the contract being 6,522*l*. Mr. Hampton, of Brighton, has been clerk of the works. The design was chosen in competition, Mr. B. Fletcher and Mr. John S. Nightingale, of London, being the joint architects.

SCHOOL-BOARD SCHOOLS.

Higham Ferrers.—Mr. E. Sharman, of Wellingborough, has been employed as architect to prepare plans, the one selected being Gothic in style, of a new school on an elevated site near the market-place. The building contract was let to Mr. John Piggott, of Rushden; the carpentering to Mr. George Smith, of Higham Ferrers; and the slating to Mr. Albert Laughton; who have worked out the plans, and the schools are now complete and opened. The exterior is red brick, with white stone dressings, and the schools are in the shape of the letter H, with the house for the master attached, almost like a T, so making the black plan something resembling HT, with large playgrounds in front, surrounded by a brick wall, with iron palisades on the top. The girls' playground is divided from the boys' by a brick wall. The interior consists of infant school-room of a rectangular shape, with class-room annexed; while the mixed school-room is in shape like an L, being originally like a T, but having a class-room taken off one end of the top of the T, it leaves it more in the shape of an L. The schools are large enough to accommodate 350 children. They are lighted with gas, the contract for the fitting of which was executed by Mr. J. Lewis. There are lavatories both for boys and girls, and the other usual offices.

Llandwrog.—The Llandwrog School Board was formed in February, 1871, and has worked indefatigably in supplying the deficiency of school accommodation that existed in the parish. Two schools have been built, one at Nantlle (which will be opened a few weeks hence), to accommodate 150 children; and the other at Penffordd Elen, situated between two villages. This school, which has been formally opened, has a mixed and an infant department—the one to accommodate 190 and the other 110. The plans (drawn by Mr. W. C. Williams, Plas Isaf, chairman of the Board) are in the newest style; there are sufficient means of light and ventilation, and the whole building is warmed by hot-water apparatus.

THE TWELVE-HUNDREDTH ANNIVERSARY OF THE FOUNDATION OF ELY CATHEDRAL.

The bisexcentenary festival in memory of the foundation, by Queen Etheldreda, of Ely Cathedral has been held with great *éclat* by a numerous assemblage of visitors. The proceedings began on Friday in last week with a series of services which continued till, and included, Tuesday.

On Monday, the proceedings became secular rather than religious; comprising chiefly a lecture in the Cathedral, a tour of the building, a luncheon in the Corn Exchange, and a reception at the Bishop's Palace. The lecture was to have been delivered by Sir Gilbert Scott, under whose supervision the alterations which have been taking place in the Cathedral during the last quarter of a century have been carried out. Sir Gilbert, however, was not well enough to fulfil his appointment, and delegated to his son the reading of the lecture he had prepared. This proved to be an elaborate *résumé* of the history of the Cathedral, and a description of the various improvements which have been effected since the modern restoration was commenced. The lecture finished, Mr. Edmund Sharpe, who acted as cicerone to the members of the Archæological Institute of Great Britain and Ireland when they visited the Cathedral, led

the way in a turn round the building, explaining as he went the various peculiarities and the varied history of the principal sections of the building. The journey proved a rather exciting one, owing to the frequency and suddenness of the strategic movements made by the ladies and gentlemen on the outskirts of the crowd. As there were eleven stations, the amount of chasing round pillars, scudding down aisles, and clambering over forms and chairs was considerable; but the result was, that the sections of the congregation had by turns a good place of hearing.

The principal portions of the cathedral have been classed under six heads,—the Norman period, A.D. 1066–A.D. 1145, illustrated principally by portions of the eastern transept and the nave; the Transitional period, A.D. 1145–A.D. 1190, shown in the western transept of the refectory; the Lancet period, A.D. 1190–A.D. 1245, to be traced in the presbytery and galilee porch; the Geometrical period, A.D. 1245–A.D. 1315, which has left its mark in the eastern transept, the cloisters, and the lady chapel; and the Rectilinear period, A.D. 1360–A.D. 1550, illustrated in the upper part of the western tower and elsewhere. The distinctive peculiarities of these styles, and how Ely Cathedral completely illustrates the history of church architecture in England, from the Conquest to the Reformation, Mr. Sharpe made clear in an interesting conversation, which lasted over an hour, and was followed throughout by the visitors, from point to point, in the earnest manner indicated.

THE LATE MR. STEPHEN SALTER.

We are sorry to hear of the death of Mr. Stephen Salter, who was for many years an architectural and engineering modeller, well known in both professions. He received medals at the 1851 Exhibition for his model of the cathedral at Hamburg, as designed by Sir G. Scott; and at the Exhibition of 1862 for his model (a remarkable work) of the passage of the Tudela and Bilboa Railway, across the Cantabrian Pyrenees, of which Mr. Vignolles was engineer; and in 1855 a medal at the French Exhibition for models of Lighthouses erected by the Trinity Corporation, most of which were designed by the late engineer, Mr. James Walker.

THE SHEFFIELD TRAMWAYS.

The tramways which have recently been opened in Sheffield are laid down upon a novel principle. It appears that after the Act was passed, the corporation, under the provisions of a clause in the Act, gave notice that they themselves would construct the tramways, and a contract was entered into for the construction of lines exceeding about ten miles, the cost being nearly 40,000*l*. The gauge of the tramways is the ordinary railway gauge of 4 ft. 8 in., and after the first six months the company have to maintain the surface of the road between the rails and 18 in. on each side, making a width of 8 ft. for each single line. The system of construction adopted is somewhat peculiar. The ordinary method involves the laying down of iron rails upon longitudinal sleepers. In the Sheffield tramways, however, there is no wood, but the rails are laid upon a system of cast-iron supports. These supports are embedded in concrete, and the rails spiked into a wooden plug previously inserted in the support. The company already have in Sheffield twelve tramway cars, all of which are elegantly fitted up.

THE MANNERS AND CUSTOMS OF THE MIDDLE AGES IN FRANCE.

It is only at intervals that the lover of books is gratified with such a handsome and altogether goodly addition to the objects of his admiration as is presented in the new work by M. Lacroix, entitled "Manners, Customs, and Dress during the Middle Ages and during the Renaissance Period."* It is in many respects a companion to the same author's volume on "The Arts of the Middle Ages and during the Renaissance Period," which we noticed at the date of its appearance in its English form. But, if we may say so, it is addressed to a still larger circle of thinkers and workers. The history of the arts was, indeed, calculated to interest all artificers who worked with artistic taste and skill in any material, as well as all archæologists and antiquaries; but the history of manners, customs, and dress must have its charm for everybody. All trades come within its scope, all conditions of people; as do all fairs and markets, all food, all fashions, guilds, games, pastimes, punishments, tribunals, and ceremonials. This mass of information is illustrated with fifteen chromolithographic prints by Kellerhoven, and about 400 wood engravings. Most of the coloured illustrations are fac-similes of miniatures from fourteenth and fifteenth century manuscripts; and many of the engravings are reproductions from rare and early works. M. Lacroix, we should explain, is the curator of the Imperial Library of the Arsenal, Paris, and has thus unusual facilities of reference within his reach, as well as a professional acquaintance with the contents of all the chief libraries of Europe. Hence the quality of his work. He has a third volume in contemplation, he informs us prefatorially, which is to relate to the various aspects of religious and military life in the same periods of time. Meanwhile we will examine that which is before us.

To begin with, M. Lacroix gives a sketch of the general condition of persons and lands at the beginning of the Middle Ages. He reminds his readers that the dissolution of the empire of the Cæsars left the populations of Europe not free, but in various stages of servitude. There were the Goths, Burgundians, Vandals, Germans, Franks, Saxons, and Lombards, all accustomed to rough warfare on one side, and the Romans, with those nations whom they had conquered, on the other; and a long time elapsed before the general confusion and tyranny settled down into anything like order or security. "There were on both sides," he remarks, "freemen, freedmen, colons, and slaves; different ranks and degrees being, however, observable both in freedom and servitude. This hierarchical principle applied itself even to the land, which was divided into freeholds, tributary lands, lands of the nobility, and servile lands, thus constituting the freeholds, the benefices, the fiefs, and the tenures." A spirit of servitude pervaded all ranks. A varlet waited at table on a vassal, a vassal on a noble, nobles on the sovereign, and all looked upon this service not as a compulsory indignity, but as a privilege and honour. M. Lacroix thinks the first political principle that was evolved from the general abasement was to bow to a superior. The greater the rank of an individual the more he was favoured by the law. Everybody belonged to somebody else. From this basis arose feudalism. Some historians represent the Germans as the regenerators of society in these old times, but our author accredits Pagan antiquity and Christianity with the gradual improvement. Many manners and customs pertaining to the one survived; and the other modified them and engrafted upon them the spirit of human equality, which slowly though certainly loosened the bonds of slaves, and made all men subject to the same laws. M. Lacroix, however, allows that it was Charlemagne who first modelled a powerful and peaceful empire out of the general anarchy. He established public administrations, founded towns, united small and scattered peoples, assigned a place for all, and, after his reign of forty-five years, left his dominions in full working order. Unfortunately his successors were not equal to their inheritance, and personal war, sometimes between individual nobles and sometimes between the nobles and sovereign, soon reduced affairs to their former level. Under the Carlovingian dynasty a change was made which rendered territorial what was up till then only personal. The Merovingian kings styled themselves kings of the Franks, not kings of France, because incessant alterations were made to the boundaries of their dominions by the incessant changes and chances of war. But now the possession of land formed the basis of social position, and everybody tried to become the holder of land. Out of the desire to hold grew the determination to keep. Castles were built. The laws relating to wandering tribes fell into disuse, and many distinctions of race and caste disappeared. The nobles, however, ensconced in their fortresses, were always indifferent subjects, preying on their neighbours and travellers, and defying the sovereign; and when the descendants of Hugh Capet wished to consolidate their power, they were obliged to attack all their strongholds before they could induce them to acknowledge their sovereignty. Arrayed thus against the nobles, the kings found the corporations and citizens of great service to them. These bodies had their towns protected by ramparts, and possessed a town-hall, a seal, treasury, and a watch tower, and they could arm a certain number of men to protect themselves or assist the neighbouring lord upon whose estate in the first instance, perhaps, their predecessors were born, and who had made conditions with them to that effect. The more the kings enlarged the privileges of the citizens, the more independent they became of their natural lords, whose power, consequently, dwindled before that of the sovereign. Hence, it was expedient on the part of the kings to treat them with generosity. It was under Louis le Gros that the title of *bourgeois* was first applied to them. This designation, continues M. Lacroix, was not applied exclusively to inhabitants of cities. "It often happened that the nobles, with the intention of improving and enriching their domains, opened a kind of asylum under the attractive title of *Free Towns* or *New Towns*, where they offered to all wishing to establish themselves, lands, houses, and a more or less extended share of privileges, rights, and liberties. These congregations, though agriculturists, took the name of bourgeois." In the general amelioration in the conditions of men, slaves became serfs at a very early stage, thanks to Christianity; and serfs eventually developed into farmers paying, first tithes and fees, and finally regular taxes. These were the ancestors of "the people." Those who continued to till the soil were the ancestors of the peasantry; those who chose to devote themselves to trade and commerce in the towns were the ancestry of the middle classes. Many curious details are given in connexion with these changes in society, which our readers should see for themselves.

Bourgeois and peasants were at first blended together, as having one origin, but the former soon acquired a degree of prosperity and affluence that enabled them to adopt habits that left the agriculturists a long way behind them. A troubadour, writing of the bourgeois of the thirteenth century, declared they had divers sorts of merits. "Some distinguish themselves by deeds of honour," continues this Arnaud de Marveil, "others are by nature noble, and behave accordingly. There are others thoroughly brave, courteous, frank, and jovial, who, although poor, find means to please by graceful speech, frequenting courts, and making themselves agreeable there; these, well versed in courtesy and politeness, appear in noble attire, and figure conspicuously at the tournaments and military games, proving themselves good judges and good company." Their taste for "noble attire," indeed, was frequently repressed by edicts. Their wives and daughters, especially, were fined if they presumed to use the ornaments and stuffs reserved for the nobility; but in proportion as their husbands and fathers were honoured by their monarchs and enlarged their immense fortunes, they disregarded fines and penalties, and wore the costliest furs and richest stuffs they could procure. Another early writer, Christine de Pisan, in the second half of the fourteenth century, relates that he went to visit the wife of a merchant, and found the walls of her house hung with precious tapestry, from Cyprus, on which were embroidered her initials and motto, the floor spread with a carpet like gold, her bed furnished with sheets that cost more than 300*l*., a quilt made of a new invention of silk and silver tissue, and pillows ornamented with buttons of Oriental pearls. A third writer, in the fifteenth century, a bourgeois, compiling directions for the guidance of a household, for the use of his young wife, gives us as many more particulars of the manner of life of the middle classes. Among his advice, he tells his wife to consider the rank of her parents and his in the choice of her apparel. "Be respectably dressed, without devoting too much study to it, without too much plunging into new fashions. Before leaving your room, see that the collar of your gown be well adjusted, and is not put on crooked." He relates an anecdote illustrative of the proverbial wilfulness of woman, which reads like a companion piece of experience to that which befell Gunhild and Gunhelda in the Norwegian story, or the owner of the gray mare and basket of eggs in this country at a later date:—

"I have heard the bailiff of Tournay relate, that he had found himself several times at table with men long married, and that he had wagered with them the price of a dinner under the following conditions:—The company was to visit the abode of each of the husbands successively, and

* Manners, Customs, and Dress during the Middle Ages, and during the Renaissance Period. By Paul Lacroix. London: Chapman & Hall. 1874.

any one who had a wife obedient enough immediately, without contradicting or making any remark, to consent to count up to four, would win the bet; but, on the other hand, those whose wives showed temper, laughed, or refused to obey, would lose. Under these conditions the company gaily adjourned to the abode of Robin, whose wife, called Marie, had a high opinion of herself. The husband said, before all, 'Marie, repeat after me what I shall say.' 'Willingly, sire.' 'Marie, say one, two, three!' But by this time Marie was out of patience, and said, 'And seven, and twelve, and fourteen! Why, you are making a fool of me!' So that husband lost his wager. The company next went to the house of Maitre Jean, whose wife, Agnescat, well knew how to play the lady. Jean said, 'Repeat after me, one!' 'And two!' answered Agnescat disdainfully; so he lost his wager. Tassin then tried, and said to Dame Tassin, 'Count one!' 'Go upstairs!' she answered, 'if you want to teach counting, I am not a child.' Another said, 'Go away with you; you must have lost your senses,' or similar words, which made the husbands lose their wagers. Those, on the contrary, who had well-behaved wives gained their wager and went away joyful."

This same fifteenth-century writer tells us there was in Paris a kind of registry office for servants, by means of which servant-maids from the country could find situations. He cautions his wife, on account of her extreme youth (girls were married at fifteen in those days), to take the opinion of Dame Agnes concerning them. This was a nun whom he had placed with her as a companion, or governess. "Before engaging them," he continues, "know whence they come, in what houses they have been, if they have acquaintances in town, and if they are steady. . . . . If they come from another country, try to find out why they left it, for generally it is not without some serious reason that a woman decides upon change of abode. . . . . Superintend the work to be done, and choose among your servants those qualified for each department." With the exception of this recommendation of personal superintendence of each task, we might be culling from the pages of any modern model housewife's manual, so far advanced towards our own stage of progress were the bourgeois matrons of four centuries ago. Not so, however, with the descendants of the serfs who remained on the soil, with only the choice of bad roads, by which they could ever leave it for relaxation of any sort. In the thirteenth century a poem was written, entitled "De l'Oustillement au Vilain," furnishing us with a picture of a peasant's home and occupation, which though very removed from the pomp and comfort enjoyed by merchants or other citizens, does not contrast unfavourably with the condition of those who labour on farms at the present day. In France, M. Lacroix affirms, the exact type described in this poem was maintained in country districts, far away from the capital and large towns, at the date of the revolution of 1789. The thirteenth-century dwelling for the *vilain*, consisted of three buildings; one for his corn, another for his hay, and the third for himself and family:—

"In this rustic abode a fire of vine branches and faggots sparkled in a large chimney furnished with an iron pot-hanger, a tripod, a shovel, large fireirons, a cauldron, and a meat-hook. Next to the fireplace was an oven, and in close proximity to this an enormous bedstead, on which the vilain, his wife, his children, and even the stranger who asked for hospitality, could all be easily accommodated; a kneading-trough, a table, a bench, a cheese cupboard, a jug, and a few baskets made up the rest of the furniture. The vilain also possessed other utensils, such as a ladder, a mortar, a handmill,—for every one then was obliged to grind his own corn; a mallet, some nails, some gimlets, fishing lines, hooks and baskets, &c. His working implements were a plough, a scythe, a spade, a hoe, large shears, a knife, and a sharpening stone; he had also a wagon, with harness for several horses, so as to be able to accomplish the different tasks required of him under feudal rights, either by his proper lord, or by the sovereign; for the vilain was liable to be called upon to undertake every kind of work of this sort."

His dress was a cloth or skin blouse, fastened round the waist by a belt, to which he could add an overcoat or mantle of thick woollen stuff. He also wore boots or shoes, and short trousers; and in some weathers a hat made of the same stuff as his blouse, or of felt. He worked bare-headed ordinarily. From his belt depended a wallet and sheaf for his knife. He owned a watch-dog, who guarded his small kitchen garden, and a few cows, which were kept in a shed close by. Rats and wild cats formed further items in his surroundings. He had his holidays in connexion with church festivals, and frequent "wakes," or evening parties, where he drank, talked, laughed, and sang to his heart's content. It was at the wakes that fairy tales were told and where matrons, presuming on their experience, pretended they knew wonderful secrets, such as could cause happiness, cure sickness, and help to ascertain the course of future events. It is not, when we think of these festive occasions, so much a matter of wonder, that as years passed by, and the state of things improved in various particulars, the old looked back to their young days as better than their last, just as our seniors of to-day would have the present generation believe that we are deteriorating from their superiority.

The nobility, during the reigns of Charles VIII., Louis XII., and Francis I., continued to send their sons and daughters to court to attend on the king or queen. They called this service their "apprenticeship of honour or virtue"; and there is no doubt it must have had its refining influences. The queen of these first two monarchs, Anne of Brittany, created a great court of ladies. She used to inquire of the gentlemen of the court if they had any daughters, and was always ready to receive them. She also formed a company of 100 Breton gentlemen, who escorted her wherever she went to mass or took a walk. She maintained the strictest integrity and discipline in her court, which was renowned for its purity, refinement, and politeness. Every noble, no matter how powerful, availed himself of this opportunity of securing the chivalric education and elegant intercourse for his sons and daughters that this custom afforded. Like the *bourgeois* and peasants, the nobles had a representative writer, in the fourteenth century, who has depicted many of their habits. This was Geoffroy de Latour-Landry, who composed for the use of his three daughters a code of admonitions in which are set forth various current social customs. "My pretty daughters," this wise parent advised, "be courteous and meek, for nothing is more beautiful, nothing so secures the favour of God and the love of others. Be then courteous to great and small; speak gently with them. . . . . I have seen a great lady take off her cap and bow to a simple ironmonger. One of her followers seemed astonished. 'I prefer,' she said, 'to have been too courteous towards that man, than to have been guilty of the least incivility to a knight.'"

M. Lacroix devotes, as we have indicated, a chapter to food and cookery. This is exceedingly interesting. He gives the history of bread, and then runs through the Mediæval materials for meals, including vegetables and plants used in cooking, fruits, meat, poultry, game, milk, butter, cheese, eggs, fish, and shell-fish, beer, cider, wine, and comes to the modes of cookery employed for soups, pies, stews, roasts, grills, the manner of seasoning, and rules of serving at table. We are thus brought in contact with the baker, the butcher, the poulterer, the fisherman, the brewer, the coppersmith, pastry-cooks, grocers and druggists, and cooks. Miniatures from fifteenth-century manuscripts, or *fac-similes* from early woodcuts, or representations of trade banners, afford illustrations of nearly all of them. Concerning bread, the staff of life in all countries, it would seem, M. Lacroix thinks it likely that the veneration in which the Gauls held the oak had for its origin the fact that acorns were largely used as food by them. "This primitive food," he says, "continued in use, at least in times of famine, up to the eighth century, and we find in the regulations of St. Chrodegand that if, in consequence of a bad year, the acorn or beechnut became scarce, it was the bishop's duty to provide something to make up for it. Eight centuries later, when René du Bellay, Bishop of Mans, came to report to Francis I. the fearful poverty of his diocese, he informed the king that the inhabitants in many places were reduced to subsisting on acorn bread." At first, bread was baked under the embers. It is true that the Romans introduced the use of ovens in Europe, from Egypt, but as late as the tenth century the old plan was pursued in some places, or upon some occasions, for at that date the abbot of the monastery of St. Thierry, near Rheims, ordered in his will that bread should be cooked for his monks under the embers,—*panes subcinericios*. A flat thin cake was, perhaps, more serviceable as a plate than any other form of bread; and as we know that they were used as such, we may thus account for the permanence of their manufacture. Froissart speaks of *tailloirs*. These were small crusty loaves, also called *tranchoirs*. In 1336, the Dauphin of Vienna, Humbert II., had four small loaves, to serve as *tranchoirs* at table besides white bread. Charlemagne fixed the number of bakers in each city according to the population. At first the baker was also the miller, but later public bakers established themselves, who baked bread brought to them ready kneaded, as well as made bread for sale. St. Louis allowed bakers and millers to be exempt from the duty of watching their towns, so that they need not neglect their work, which he considered of paramount utility. And here, again, we would refer our readers to M. Lacroix's pages for much curious information. Concerning butcher's meat, too, and the French preference for pork, leading up to ham fairs, and butchers' privileges, yielding only to the King of France on his accession to the throne, the right to create a master butcher, there is much interesting reading.

After describing the luxurious banquets of the French Court, and a wedding dinner of a *bourgeois*, and showing M. Viollet le Duc's drawing of a ceremonial entertainment, with its peacocks, whole deer, enormous pies, silvered and gilt on the top, kids, pigs, herons, sturgeons, wild boars, goslings, chickens covered with yolks of eggs and sprinkled with spice, jellies, creams covered with fennel-seeds preserved in sugar, plums stewed in rose-water, and many other items, not including a final course entirely composed of prepared wines, fruits, and various pastries, some of which represented stags and swans, M. Lacroix consoles us by reminding us that from the establishment of the Franks in Gaul down to the fifteenth century, inclusive, the French partook but of two meals a day,—dinner at ten in the morning, and supper at four in the afternoon. When, in the sixteenth century, dinner was postponed till eleven, and supper till seven, the old hours were backed in a proverb:—

"To rise at six, dine at ten,
Sup at six, to bed at ten,
Makes man live ten times ten."

The chapter on guilds and trade corporations is illustrated by *fac-similes* of a set of twenty drawings, showing various craftsmen at work, designed and engraved by J. Amman, in the sixteenth century. A fragment of a woodcut after a drawing by Wohlgemüth for the "Chronique de Nuremberg" shows us a companion carpenter. A *fac-simile* of a miniature in the "Chroniques de Hainaut," a fifteenth-century MS. in the Burgundy Library, Brussels, illustrates a group of carpenters putting together the timber framework of a small house. When apprentices or companions wished to become masters, they were subjected to successive examinations and trials. The cut, which we reproduce from the stalls in Rouen Cathedral, shows a carpenter's apprentice at work on a trial-piece.*

The view of the staircase of the Office of the Rouen Goldsmiths (which we give*) is inscribed in the book "15th century," but looks not so ancient. The shield, at any rate, is more modern: in fact, below it, on the top of the newel, good eyes may see the date 1653.

The Basle Library has been also looked through to furnish other examples. But we will pass on to the chapter on taxes, money, and finance, to allude to a view of the house of the celebrated merchant and financier, Jacques Cœur, at Bourges, which is now converted into the Hôtel de Ville, and which we are enabled to reproduce.* This merchant shares with Joan of Arc the honour of saving the freedom of the French kingdom; for he restored the finances of Charles VII., and managed to keep him supplied with the sinews of war,—money,—till he was able to prevail against our predecessors; but, nevertheless, Jacques fell out of the good graces of the king, and was compelled to make an *amende honorable* to his majesty, which ceremony is shown in the *fac-simile* of a miniature of the Chroniques of Monstrelet, a manuscript of the fifteenth century, in the National Library of Paris. His house is a charming memorial of his taste, as all the architectural world knows, and the view given of it is equally pleasing. We must pass over the chapters on law and the administration of justice, and on secret tribunals, with the condemnations, tortures, and executions, though full of particulars, some of which are new; as well as those devoted to the fearful punishments in vogue in the Middle Ages, and the tramps, gipsies, beggars, and impostors of the streets; to one in which our readers are likely, perhaps, to be more interested,—the grand ceremonials of the days of yore. There is, however, an intervening chapter on the Jews of which we must give some outline.

After alluding to the day when the Romans seized upon Jerusalem, and the descendants of the old patriarchs had to wander forth over the face of the earth in search of new homes, M. Depping is quoted to show their condition after they were scattered over Europe. He says, feelingly:—"A Jewish community in a European town during the Middle Ages resembled a colony on an island or on a distant coast. Isolated from the rest of the population, it generally occupied a district or street which was

* See p. 846.

separated from the town or borough. The Jews, like a troop of lepers, were thrust away and huddled together into the most uncomfortable and most unhealthy quarter of the city, as miserable as it was disgusting. There, in ill-constructed houses, this poor and numerous population was amassed; in some cases high walls enclosed the small and dark narrow streets of the quarter occupied by this branded race, which prevented its extension, though, at the same time, it often protected the inhabitants from the fury of the populace." The Ghetto in Rome approaches very nearly to a realisation of this account; but the Jews' quarter in Prague retains a more exact resemblance to it. There is the large inclosure, divided into small irregular streets. Down the principal thoroughfare are stalls covered with clothes, furniture, and utensils for sale, some old and some new. The synagogue is a square building, dark and strong like a prison, covered with dirt and moss. The windows are narrow loopholes, and the door so low that those who pass through it into the dark passage within must stoop. The interior is lighted by a few lamps, and fires are used to moderate the icy temperature. The roof is supported on pillars, and along the side-walls are dark recesses in which women assist at the celebration of worship. Nothing has been repaired or changed for many centuries, and the book of the law is as venerably old. Paris has never had its Jewry proper. The Israelites who established themselves there settled down in the neighbourhood of the markets, but were not otherwise kept isolated from the general population except in the matter of a burying-place. But most of the French provincial towns had their *Juiverie*. In the southern towns, as in Spain, Portugal, and Venice, they enjoyed the protection of the nobles, traded with foreign ports, and bought and sold with the same facilities as were permitted to Christians; but in the northern districts they were not so favoured. The Christian populations in the north of Europe knew no sympathy with the ancient people. They not only forgot Joseph, like the chief butler of old, but they forgot Jacob, Isaac, Abraham, and their grand old story. They heard and saw, on all hands, details of the Passion, and felt that resentment to the descendants of the Jews who brought it about was a meritorious state of mind. In Holy Week especially, when their horror was intensified by all the eloquence of the pulpit, they were easily moved to deeds of extreme violence towards the Jewish communities. This was so well understood that, even where the authorities made no regulation compelling them to do so, the Jews shut themselves up in their own quarter till the exciting week was over. All sorts of accusations were fabricated against them time out of mind, some of which, perhaps, served as a pretext for fresh extortions from them. The case of the supposed murder of the child in Lincolnshire, in 1255, resulting in the death of nineteen Jews and imprisonment of seventy-one more, is detailed as a case in point. There was a similar accusation brought against the Orleans Jews in 1171, and another against the the Jews at Trent in 1475. Facsimiles of the early woodcuts by Wohlgemüth, showing some of the murders, are given. An account, too, is printed of the public humiliations, such as having to run races for the amusement of the public, having the ears of a representative boxed in Toulouse cathedral on every Good Friday, wear badges, pay extra tolls, &c.; and a statement is made of their gift for commercial enterprises, their taste for all matters of finance, their skill, in fine, of creating capital that solaced them for all the indignities they endured, and made them brave all their social inequalities. Occasionally, a few individuals or families were induced to detach themselves from their fathers; but this was rarely of benefit to them, for they were eyed with suspicion and closely watched. So late as 1611 an appeal was made against them, entitled a "Remonstrance to the King and the Parliament of Provence on Account of the great Family Alliances of the new Converts." Altogether this is a curious chapter in the history of the Middle Ages.

Of a very different aspect were the grand ceremonials of the clergy, nobility, and *tiers-état*. For some centuries nothing in this department of things rested on any settled basis. As M. Lacroix observes, "The trifling rules which made etiquette a science and a law were introduced by degrees, and have only very recently been firmly established. When Charles VI. was about to marry Isabel of Bavaria, then fourteen years of age, he wished to arrange a magnificent entry into Paris for her, and begged Queen Blanche, the widow of Philip de Valois, to preside over the ceremony, and see that it was conducted according to the custom of olden times, who, in the absence of any fixed rules, was obliged to consult the *Chronique de Saint-Denis*. In the fifteenth century the first embodiment of rules relating to such matters appeared under the title of "Honneurs de la Cour." This was the work of the celebrated Aliénor de Poitiers, but it was not generally accepted by the nobility, for in 1548 King Henry III. commissioned Jean du Tillet, the civil registrar of the Parliament of Paris, to search among the royal archives for documents to throw light on disputed points and serve as precedents. It was this monarch who created the office of grand master of the ceremonies of France. Pope Julian II., in 1504, instructed his master of the ceremonies to publish a decree determining the rank of the various sovereigns of Europe, or their representatives, but it was not accepted or sanctioned by those concerned. During the whole of the Middle Ages, in fine, the question of precedence was a source of constant litigation and bloodshed. The chief ceremonial has always been the consecration and coronation of kings. This always took place on a Sunday. Pépin le Bref was the first king who was anointed, and he approved of the ceremony so much as to go through it again in the following year, with his two sons, Charlemagne and Carloman, in the Abbey of St. Denis, at the hands of Pope Stephen III. Charlemagne was also twice anointed, first as King of Lombardy, and then as Emperor. His successor, Louis le Débonnaire was anointed at Rheims, which cathedral enjoyed the privilege of the ceremony so frequently that its clergy looked upon a consecration as their right, and finally were justified in doing so by a decree made by King Louis le Jeune. Down to the end of the reign of the Bourbons of the elder line, this ancient church saw every consecration with the exception of that of Henri IV., who was crowned at Chartres, because the gates of Rheims were closed against him. The ceremony began over-night, for at the conclusion of the evening prayers the monarch went to the church, and passed part of the night in prayer there. A large platform was erected between the chancel and nave, and upon it, at the appointed hour, the king, his officers of State, twelve ecclesiastical peers, six lay peers, and any others whom the king might invite, assembled upon it. A deputation of barons was sent to the Abbey of St. Remi for the holy vial, containing the *ampulla*, that a dove brought from heaven on the occasion of the coronation of Clovis, four of whom remained as hostages, whilst the abbot and his monks went in procession, and placed it on the altar. The Abbot of St. Denis, with similar solemnity brought the crown, the sword, the golden spurs, the gilt sceptre, the rod, the sandals, the chasuble and mantle, that were kept in the treasury of his monastery since the reign of Charlemagne, and placed them by the side of the vial. In the course of the ceremony the king walked to the foot of the altar, bared his head, and took off part of his dress, and his tunic was furnished with openings on the chest, shoulders, elbows, and in the middle of the back, which were kept temporarily closed with silver aiguelets. After the Archbishop of Rheims drew the sword from its scabbard, and handed it to the king, who passed it on to an officer, he took a single drop of the miraculous oil out of the holy vial with a gold needle, and having mixed it with some oil from his own church, proceeded to anoint the king on the forehead, breast, back, shoulders, and elbow joints. The monarch then rose, and with the assistance of his officers, put on his robes, and received from the archbishop the ring, the sceptre, the rod of justice, and, lastly, the crown.

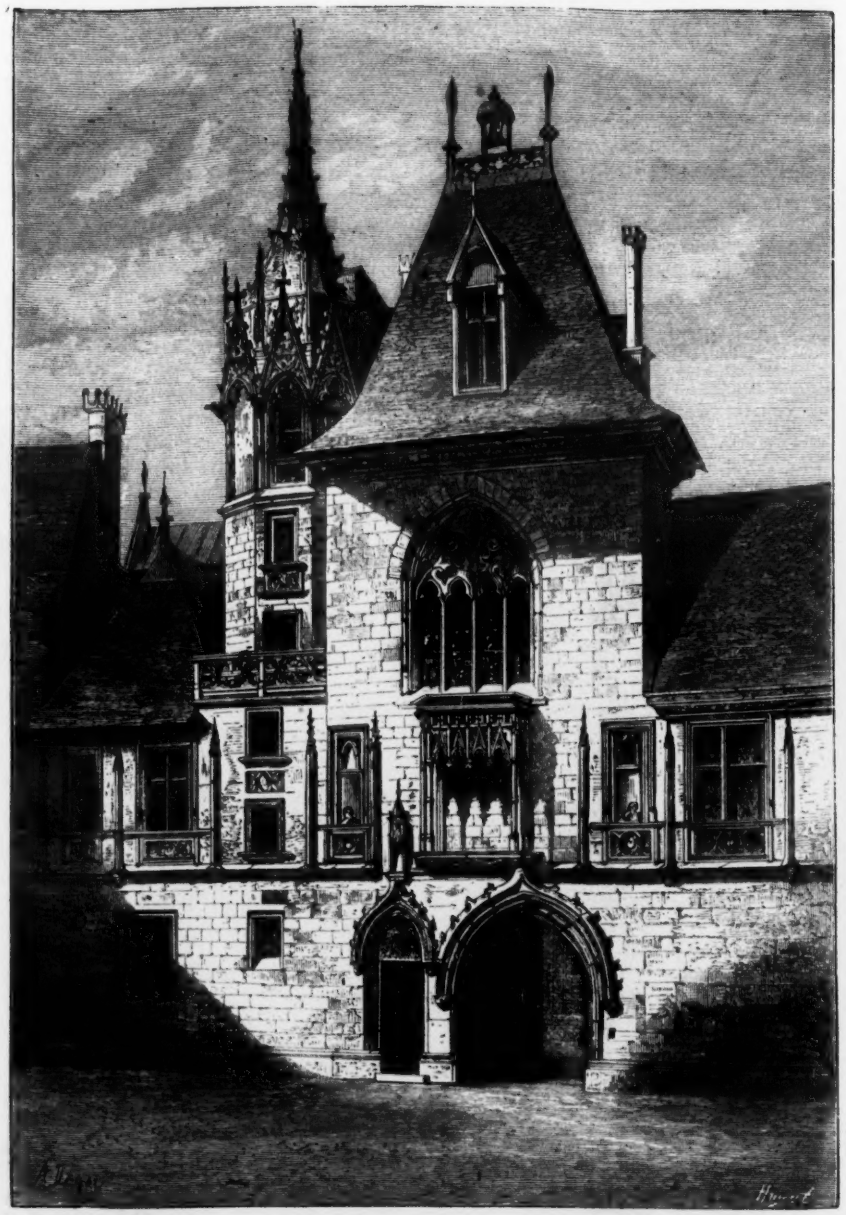
Juvenal des Ursins has left an account of the entry of the Isabel of Bavaria into Paris, to which we have alluded. Great crowds went out to meet her, and at the cross-roads there were groups representing historical scenes, or *tableaux vivants*, and fountains of water, milk, and wine. The bridge by which she crossed the Seine was covered with blue taffeta, embroidered with gold fleurs-de-lys, and at the moment of her passing a man was let down from one of the towers of Notre Dame, through an opening in the taffeta sky, who placed a crown upon her head, and was then drawn up again by the same means arranged for his descent. Another surprise awaited her at the Grand Chastelet, where there was a court hung with azure tapestry, intended to represent a *lit-de-justice*. In the centre of it was a large white stag, artificially constructed to conceal a man within, who caused it to move its eyes, horns, mouth, and limbs. Near it was a large bright sword, unsheathed, which it lifted with its right fore-foot as the Queen passed, and brandished it. Juvenal des Ursins adds that the king was so very anxious to see how this entry passed off, that he persuaded Savoisy to accompany him into the crowds of spectators. The two, mounted on a strong horse, and disguised, went through the town, and came up to the stag just as the queen was passing. The crowd was very dense at this point, and the sergeants entrusted with keeping the road clear for the queen's litter and attendants, had to apply their birch wands pretty sharply to people's shoulders, to keep them from blocking the way. Savoisy struggled to get near enough to the stag to see what was passing, and both he and the king, who was behind him, were well beaten on the shoulders. In the evening, when the matter was discussed before the ladies, great fun was made of it, and the king laughed heartily at the price he paid for his curiosity.

Dame Aliénor de Poitiers, who had the subject of etiquette deeply at heart, went so far as to say that she feared the possessions of the great houses of the nobility were getting so large as to encourage chicanery or concealment of birth, "so as to make away with too many children." When there was any very special ceremonial to record she was in her element. Thus she details every act of respect paid by the Duchess of Burgundy to Mary of Anjou at Châlons, in 1445. When the duchess arrived, with her retinue on horses and in carriages, in the courtyard of the mansion, where the king and queen were, she alighted, and her first maid of honour carried her train. M. de Bourbon gave her his right hand, and the gentlemen went on in front. In this manner she was conducted to the hall, which served as the ante-chamber to the queen's apartment. There she stopped, and sent in M. de Crequi to ask the queen if it was her pleasure that she should enter. . . . . When the duchess came to the door she took the train of her dress from the lady who bore it, and let it trail on the ground; and as she entered she knelt, and then advanced to the middle of the room. There she made the same obeisance, and moved straight towards the queen, who was standing close to the foot of her throne. When the duchess had performed a further act of homage, the queen advanced two or three steps, and the duchess fell on her knees; the queen then put her hand on her shoulder, embraced her, kissed her, and commanded her to rise." Can we not picture the whole scene, the painted ceiling of the chamber, the hangings of the wall, the vases, and other ornaments, and the group of court ladies? When a duke and duchess were in their own court, everything upon their table was covered. The modern phrase, *mettre le couvert* (lay the cloth), is a resonance from this custom of covering everything in *cadenas*, or cases, including the basins in which the fingers were dipped. But when their sovereign was present, all these marks of respect were removed, and placed before him.

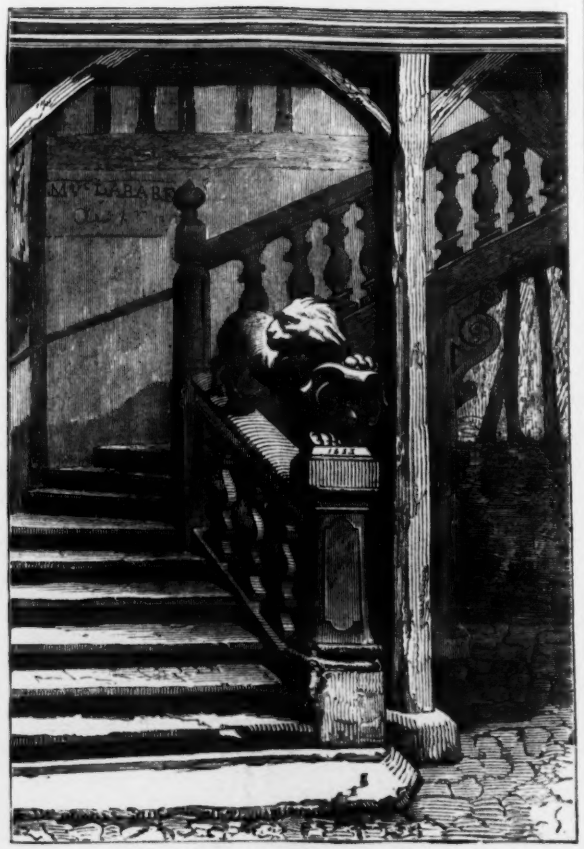
One more sample, and we will conclude our notice. For mourning, the kings of France wore scarlet or violet, never black. The queens wore white, and kept their apartments for a whole year. Hence the frequent *château, hôtel*, or *tour de la reine Blanche* to be found in the buildings of the Middle Ages, the same containing the apartments in which a year of queenly widowhood has been passed in some old time. A duchess, and the wife of a banneret, on going into mourning remained in their apartments, which were hung with black, for six weeks. The duchess remained lying down all day on a bed covered with a white sheet for the whole of the six weeks; but the wife of the knight banneret could get up at the end of nine days, and remain sitting at the foot of the bed on a black sheet. For the ceremonials of the *tiers-état*, or middle classes, and lower orders, their *fêtes* and feasts, we must refer inquirers to the volume we have attempted to describe. Looking to the last chapter, which is on costumes, and noting how exactly it covers the same ground gone over by M. Viollet-le-Duc in his "Dictionnaire raisonné," we think of Cowper's line, "Who loves a garden loves a greenhouse too," and feel that we shall not be misleading our readers if we assure them that those who enjoy M. Le Duc's work will also appreciate that of M. Lacroix; especially as the latter presents the great advantage over the former of being in the English language.

THE MANNERS AND CUSTOMS OF THE MIDDLE AGES IN FRANCE.*

Carpenter's Apprentice working at a Trial Piece.
From one of the Stalls called Miséricordes, in Rouen Cathedral.
Fifteenth Century.

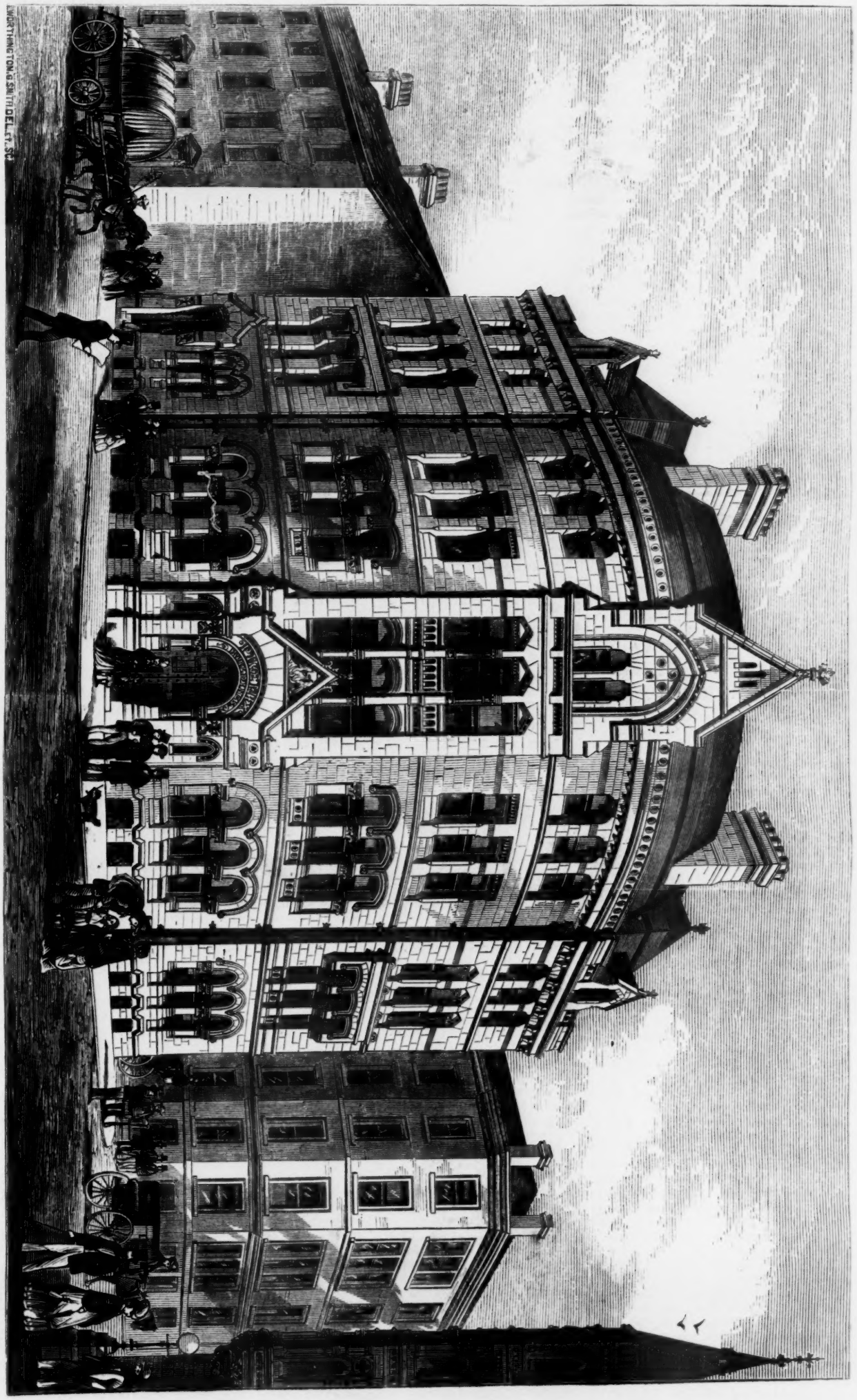


The House of Jacques Cœur at Bourges, now converted into the Hôtel de Ville.

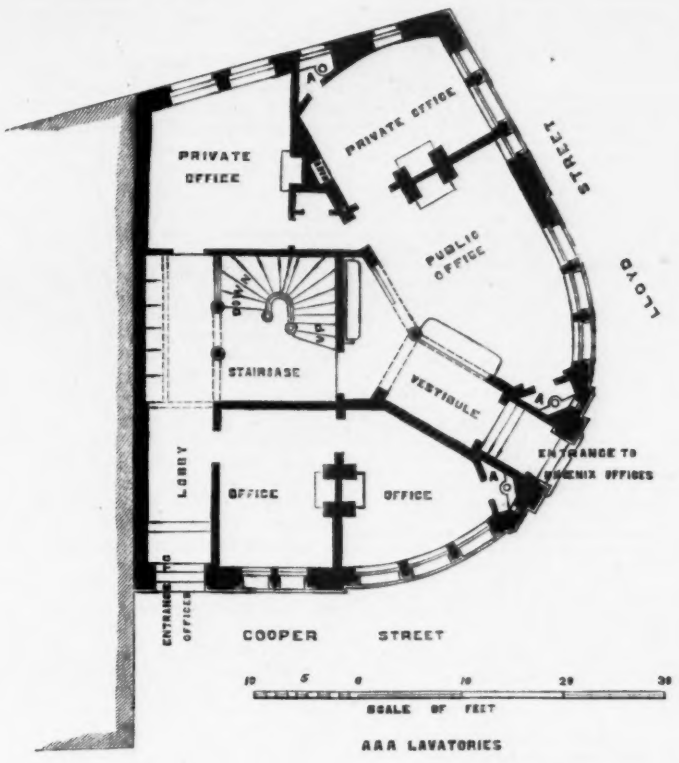


Staircase of the Office of the Goldsmiths of Rouen. The Shield which the Lion holds shows the Arms of the Goldsmiths of Rouen. (Present condition.)

* See p. 842, *ante*.



THE PHŒNIX FIRE INSURANCE COMPANY'S OFFICES, MANCHESTER.—Mr. John Lowe, Architect.



The Phœnix Fire Insurance Company's Offices, Manchester.—Plan.

NEW BUILDINGS FOR THE PHŒNIX FIRE INSURANCE COMPANY, MANCHESTER.

The building shown in the accompanying plate is now in course of erection. It stands on the site of the old premises of the company at the corner of Cooper and Lloyd streets, immediately opposite to the south side of the new town-hall. In consequence, however, of the corporation deciding to widen Cooper-street at this point, in order to show off that part of the town-hall to better advantage, the Phœnix building has had to be set back about 15 ft., and the corner rounded, as shown on the plan. The fronts are of Darley Dale stone, with bands of red Mansfield, while the side elevation next Chapel-street is faced with red stocks. The rest of the walls are of common bricks. The main entrance is for the use of the company's offices, which are in that part of the ground-floor facing Lloyd-street. They consist of a large public office and two private ones, with accommodation for safe and lavatories. The remaining portion of the building, both on the ground floor and on the other floors, is intended to be let off for offices, and for these an entrance is provided in Cooper-street. The staircase is of wood, and well lighted. Conveniences for the offices are placed so as to be entered from off the staircase about midway in each flight. The lobbies are to be laid with ornamental tiles, and the arcading in the staircase-hall has red Mansfield shafts, with Bath-stone caps and tympanum, and Darley Dale bases; the parapet there being also of Darley Dale. The whole of the work is contracted for by Messrs. T. Clay & Sons, of Manchester, with Messrs. Ellis & Hinchliffe as sub-contractors for the mason's work. The contract amounts to about 7,000*l*. Mr. John Lowe, Manchester, is the architect.

BAS-RELIEF AT DEPTFORD.

When reading a paragraph referring to the Resurrection Gate in your article on "St. Giles's," it occurred to me that it might interest many of your readers to know that a very curious bas-relief of the Judgment Day exists in the churchyard of St. Nicholas, Deptford. It is beautifully executed in lead, and is in excellent preservation; it is in a very appropriate position, being over the door of the dead-house.

Deptfordodian.

A HEALTH POET OF THE EIGHTEENTH CENTURY: HENRY BAKER.

There are no names more worthy of remembrance, or works more fit to be rescued from obscurity, than those associated with social reform. The modern history of human and public health is, in fact, the history of our civilisation. The growth of unchecked disease,—of disease that is both preventible as well as curable,—is nothing short of the growth of barbarism and criminal ignorance. Health and disease have formed the themes for both the prophet's and poet's pen in the early ages of the world, but in a limited way. Man's worst passions and frailties have met with rebuke and exposure in inspired writings; but man's home and surroundings, which have had even more to do with the influencing of his character than aught else, have been scarcely deemed worthy of serious attention from a moral or social point of view. Homes, to be sure, from the earliest period, according to the position of the owners, have been rendered luxurious more or less; but their degree of comfort or healthiness, despite their barbaric grandeur, must have been small indeed. The mind of their age probably thought them perfect as well as the mind of a generation in our memory thought theirs so; but the well-authenticated plagues that have devastated this planet of ours have afforded us unerring proofs of what unhealthy life and living brought upon the world and perpetuated. To apostrophise health and paint dire disease is a commendable work, whether performed by a poet, painter, or philosopher. Sculptors may embody, and some of them have embodied, unutterable pain, sorrow, and madness in the attitude and features of their subjects, and in every way that the lesson of health and its opposite, disease, can be portrayed to man for observance and avoidance, a benefit is conferred upon the living and the unborn human race by following it.

One Henry Baker, in the year 1725 or 1726, published a volume of poems, and among his verses there is one, at least, that deserves to be rescued back to a wider popularity, not only for the sake of the author, but of the subject. The poem is entitled "An Invocation to Health." At the date of the publication of the volume the author could not have been more than twenty-three years of age, and his subsequent success or celebrity could not be anticipated. Henry Baker, however, before the close of the eighteenth century, was well known as a naturalist and a member of the Royal Society and the Society of Antiquaries. Beginning life as a bookseller, he relinquished trade to commence the tuition of the deaf and dumb, and in the pursuit of that noble vocation he acquired a large fortune. In devoting his energies to instruct the deaf and dumb, he became naturally one of our social reformers, as in depicting health and disease by the aid of poetry he acted as an auxiliary in a sanitary direction. In addition to what we have mentioned, the life of Henry Baker may be summed up thus:—He married a daughter of Daniel Defoe, by whom he had two sons. In 1740 he obtained from the Royal Society a gold medal for his microscopical experiments on saline particles. In 1742 he published his "Microscope Made Easy," and in 1764 his "Employment for the Microscope." He died in 1774, leaving 100*l*. to the Royal Society for an anatomical or chemical lecture, called the Bakerian lecture. His eldest son, who had been adopted by an uncle, a silk-throwster in Spitalfields, to whom he succeeded in the business, was devoted to theatrical entertaiments; but David Erskine Baker became improvident, and squandered his property, finally joining some strolling players. Very few particulars are known of the closing years of his life, but he is supposed to have died three or four years previously to the death of his father. Connected with his life there is, however, one matter worthy of notice. As the author of "A Companion to the Playhouse," published in 1764, he laid the basis of a work now known by the title of the "Biographia Dramatica."

WARMING AND VENTILATING A HOUSE IN CANADA.

Sir,—I have been not a little surprised at the asserted ignorance of even your architects on the subject of house ventilation, and as I see a good deal of interest has been awakened in the subject recently, I venture to address you. Without stopping for demonstration, I will lay down two axioms which may be safely accepted as true.

1st. If the fresh air be introduced cold it should come in near the ceiling and through numerous very small openings to avoid draught, and the effete air should be taken off at the top also.

2nd. If, on the other hand, warm fresh air is to be introduced, it should be brought in along the skirting, and the effete air be taken off also near the floor, as otherwise the freshest air would be first drawn off.

The latter is the proper plan, and no better exhaust is needed than a common open fire.

To convince you that my theory is correct, I will relate my own experience.

For nearly twenty years I have warmed my house by my cooking-range, and, as I burn coal in winter and wood in summer (because the fires can be let down and started as required with wood), my fuel costs less in midwinter than in midsummer, notwithstanding the mercury often falls 20° to 30° below zero.

My house is a detached one, two stories, with basements and attics, all in use, and a wing, 13 ft. square, the main building being 30 ft. by 40 ft. The range is in a basement kitchen, and has a fire-box 2 ft. square, and 18 in. from grate-bars to top of range, which fire-box is completely lined by a coil of 1 in. pipe, and the coal is poured in from the top. At the back of the range, and under the central hall, is a brick vault, 6 ft. or 7 ft. square, in which are some 500 ft. of inch pipe in coils, all connected with the fire coil. I have also a smaller circulation, having one turn at the bottom, inside the larger coil, and forming with the grate, which it surmounts, the bottom of the fire-chamber, and passing up, makes another twist around the top of the fire-chamber, then leads off through a knife and boot room in the wing basement, up through a wall coil in the pantry, to the bath-room, along one side to the expansion pipe, back again, and down, and along the ceiling of a small store-room, then into the back hall, along the stairway down to a large coil under an open iron tube opposite the dining-room door, and back to the range, all the apartments being warmed by the radiated heat from the pipes placed in them. The outside hall doors being constantly in use, afford ample ventilation for these rooms, and the enemy is met at the door. The living-rooms, say drawing-room, dining-room, and library, on the ground floor,

and a small boudoir on the first floor, have flues and registers, bringing a constant stream of fresh warm air from the vault, into which a stream of cold air is admitted day and night, even with the thermometer, 30° below zero. Every bedroom, as well as other rooms, has an exhaust flue near the floor, always open, and the staircase being an open one, in the centre of the house, the only trouble is to keep the heat down.

By this means I have a temperature of 65° to 70° in the living-rooms, and 60° to 65° in the bedrooms without ever having to speak or even to think of the state of the fire, for the reason that the water so completely absorbs the heat that the cook must supply the house before any heat can be got in the ovens, of which, by the way, there are two; and a third coil, which supplies a copper boiler of hot water for the bath and other purposes, while the smoke-pipe runs the whole length of the basement hall, keeping that entire flat warm. Both coils are hermetically sealed, and the same body of water has circulated in the main coil for eleven years without diminution. I may mention that some 4 ft. of the large radiating pipe lies in a shallow pan of water, provided with a ball cock, and runs from that directly into the fire-coil. This pan is on the bottom of my air-vault, and the amount of steam given off is exactly proportioned to the rate at which the fire is forced, the water in very cold weather being hot when returning to the fire-chamber.

Half of my smaller circulation being at the bottom of the larger one, I have a square frame of 6 in. by ½ in. iron, which rests on the inner coil at the bottom, and carries a smaller grate, 12 in. by 12 in., the space between the frame and coil being filled with cinders and ashes. By this means the fire-chamber is reduced by 6 in. in depth, and even then the combustion is chiefly in the centre, so that only about one-half the fire-coils are exposed to the fire. This false grate is put in about the middle of March, and left till near Christmas, after which time the full force is required, and the fire does not go out all winter.

I burn about ten tons of Welsh anthracite coal, during, say six months and a half to seven months.

I have extra ventilators near the ceilings in my living-rooms, which are only used when the rooms are filled, and more gas than usual is burning. I may mention that I have openings for hot air at the ceilings, but have long since given up using them, being satisfied that the other plan is best.

In addition to this, I have a small conservatory, 10 ft. by 20 ft., which I warm from an open fire in the dining-room, which I always keep going for its cheerfulness, and also for ventilation. This conservatory is heated by hot-water pipes, the boiler having twenty-four tubes, 2 ft. long, and 1 in. diameter, placed four deep and six high, in the chimney immediately above and behind the fire in an ordinary low English grate, and during four years' use I have never lost a plant from frost.

From my experience, I am certain that there is enough coal burnt in the kitchen of English houses to thoroughly warm and ventilate the whole house, and that without the slightest extra trouble, when once the apparatus is put in.

Being only an *amateur*, I subscribe a *nom de plume*, over which I sometimes write in the local press, but I enclose my card.

Montreal. JACOB KALLEPER.

IMPROVEMENTS IN OXFORD.

NUMEROUS alterations and improvements have been going on in Oxford during the last twelve months, and the local *Journal* and *Herald* give their usual lengthened reports on the various works in the city and the university. The *Journal* states, however, that the only important works which have been commenced this year are the Cowley St. John National Hospital for Incurables (the foundation-stone of which was laid by Prince Leopold in May last), the new chapel at Keble College, a new Roman Catholic Church in St. Giles's, and an observatory for Professor Pritchard in the Parks. The city improvements, according to the *Herald*, have been more than usually numerous, the most important being the new street leading out of High-street and the widening of the approach from Queen-street to New-road, and the numerous schools which have been erected in several parts of the city. Many of the colleges having had improvements carried out very recently, nothing has been required to be done.

The work of alteration and restoration in the cathedral is still proceeding. Since our last report, says the *Journal*,—

"A new entrance to the cathedral has been effected by cutting through the residence formerly occupied by the Regius Professor of Divinity on the east side of the principal quadrangle, thus, in our opinion, completely destroying its beautiful façade. Looked at from the opposite side of the quadrangle, it appears like the entrance to a railway tunnel, and we cannot help expressing our deep regret that it was ever made. The work in the porch is certainly beautifully executed, but that does not compensate for spoiling the appearance of the quadrangle. The roof of the porch is of carved oak, and on the sides of the walls there are stone recesses, which serve as seats. The steps leading to the cathedral are of Mansfield stone, but the floor is composed of Haseley and Leicestershire slabs. Underneath the floor of the porch there is a vault, in which will be placed the new heating apparatus. The doors inside the porch are made of carved oak. Two new stained-glass windows have been placed in the cathedral,—one in the south transept, to the memory of the late Mr. F. Grantham Vyner, who was killed by Greek brigands in 1870; and another in the south aisle to the memory of Mr. Geo. W. M. Dasent, who was drowned at Saudford Lasher in 1872. The statue of Dean Jackson has been removed from the north transept to the library. In the gallery in the south transept, Mr. T. Leigh, clerk of the works, has placed a collection of architectural fragments which have been found during the restoration. They comprise portions of work of the periods from Saxon to Late Perpendicular. Some pieces are of special interest, and are believed to be portions of the shrine of St. Frideswide, to whom the cathedral was originally dedicated. These interesting fragments have been carefully catalogued, and have attracted the attention of several antiquarians. We had hoped that by this time the new bell-tower would have been finished, but nothing further has been done since our last notice, and there the temporary erection stands in all its ugliness. This temporary erection, the cutting away of a portion of the parapet beneath it, and the construction of the western entrance to the cathedral, have given rise to their being called 'The Tea Chest,' 'The Trench,' and 'The Tunnel,' and a clever little *brochure* on the subject was published by Messrs. Parker some months ago. Its title is 'The Vision of the Three T's,' and towards the close of it, in describing the vision, the author says:—'Stand here with me and gaze. From this thrice-favoured spot, in one rapturous glance gather in and brand for ever on the tablets of the memory, the Vision of the Three T's! To your left frowns the abysmal blackness of the tenebrous Tunnel. To your right yawns the terrible Trench. While far above, away from the sordid aims of Earth, and the petty criticisms of Art, soars, tetragonal and tremendous, the tintinabulatory Tea-chest! Scholar, the Vision is complete!'"

St. Edward's School is now completed, and will be shortly formally opened by the lord bishop of the diocese. Mr. Wilkinson, of Oxford, was the architect, and Messrs. Orchard, of Banbury, were the builders. The building, which is of brick and stone, and covered with Broseley tiles, consists, on the ground-floor, of a master's residence, forming the south-west wing of the building, containing vestibule entrance, hall and staircase, drawing-room, study, and breakfast-room, with private cellars beneath the hall. The main portion of the building, being the school proper, is approached by a boys' entrance hall upon the west side, opening into a long corridor extending the entire length, from which are approached a refectory 60 ft. by 24 ft.; library, 17 ft. by 24 ft.; two master's sitting-rooms, 10 ft. by 13 ft. 6 in.; school-room, 60 ft. by 24 ft.; two class-rooms, about 17 ft. by 15 ft.; lavatory, 17 ft. by 15 ft.; coat and boot room, 16 ft. by 17 ft. 6 in.; a boot-cleaning room, 13 ft. by 17 ft. 6 in., in which also is the heating vault. Access to this portion of the building is also obtained by a master's entrance under an arcade upon the south side, and by a boys' entrance, also under an arcade, upon the east side. Separate studies for six prefects are also provided in a semi-circular annexe adjoining the master's entrance. A spacious lobby, 24 ft. by 12 ft. adjoins the schoolroom, and the upper stories are approached by a stone staircase, 5 ft. wide. In the western wing, which is devoted to the culinary and service department, is a butler's room, 13 ft. by 14 ft.; a servants' hall of similar dimensions; kitchen, 25 ft. 6 in. by 20 ft.; scullery, 16 ft. by 20 ft.; larder, 14 ft. by 14 ft.; cellar, 20 ft. by 9 ft., with coal store, servants' closet, &c., upon the north side of the courtyard. The playground, about 112 ft. by 90 ft., is enclosed with brick and stone walls, and a range of earth closets and urinals is situated on the east side. Gas has been laid to all parts of the building. The principal rooms on the ground-floor will be heated by coils of hot-water pipes, and a hot and cold water service is provided to baths, lavatories, &c. The area of the site is about five acres. It has been enclosed with post and rail fence upon the east, south, and west sides, and by stone wall upon the north. The ground has been levelled, and a margin of young trees planted on the east, south, and west sides of a gravel path, which forms the boundary of the intended cricket-field.

THE CONSTANT WATER SUPPLY.

THE Water Examiner, in his latest remarks, says:—

The Kent Company have completed the arrangements for, and are now giving, constant supply to about 1,500 houses in their district.

The New River Company have now the power of affording effective constant service in their district. They have also commenced a new high service covered reservoir to contain 1,000,000 gallons at Southgate, in anticipation of the requirements of the water supply to Edmonton parish.

The East London Company are extending the constant system of supply in their district.

The Southwark and Vauxhall Company are constructing covered service reservoirs at Nunhead, to contain 18,000,000 gallons.

The West Middlesex Company are giving constant supply to a number of houses on the application of the owners, who have provided fittings according to the Board of Trade regulations of the 10th of August, 1872, and are fully prepared to extend the constant supply when called upon. This company is also constructing extensive works and additional engine power at Hammersmith and at Hampton to insure effective constant supply.

The Grand Junction Company have completed a high service reservoir near Kilburn, to contain 6,000,000 gallons for constant supply.

The Lambeth Company are carrying out extensions and improvements in their works. At Molesey, the construction of reservoirs is being proceeded with to contain 110,000,000 to 120,000,000 gallons of water, with pumping engines to fill them to a level of 12 ft. above the river. The company are also giving constant supply by means of stand-pipes in a number of courts and alleys, and arrangements have been made to supply upwards of 5,000 houses of this class. The alterations in fittings under the new Board of Trade rules and regulations are being gradually effected as occasion offers, and are carried out in all new buildings.

MORETON HALL.

SIR,—I have visited recently this interesting old edifice, four miles south of Congleton, in Cheshire. The house is now used as a farm-house, and accessible. There are two engravings of it in Lysons's "Magna Britannia,"—A.D. 1810,—vol. ii., pt. 2, p. 457, namely, a south-east view, which includes the bridge over the moat, with the gateway,—and a view of the south side of the court as seen from the south. The east side also is seen partially in this latter view, with the entrance to the hall and the windows of the hall,—a very fine view, altogether. Over the bow window of the hall are these inscriptions, carved in woodwork, together with the arms and crest of Moreton,—"God is al in al thing." "This windows whire, made by William Moreton in the year of our Lord, M.DLIX. Rychard Dale, Carpëder, made this window by the grace of God." The timber work of the house, painted in black and white colours, alternately, and the glazing of the windows merit special notice. The house is surrounded by a moat, and occupies three sides of a court. On the north side is the hall, with its large bow-window; on the east side was the old chapel, on the wall of which inscriptions were painted, in text-hand, and ornaments. The west side is open. The entrance is on the south side, over a stone bridge across the moat. The upper part of this side of the building, 68 ft. long, was occupied by a gallery, with a continual range of windows on each side of it, seen in the engraving No. 1. On the road to this house from Congleton, Astbury Church is seen, on the left, and it should be inspected. In the churchyard are several ancient tombs, with figures recumbent.

CHR. COOKE.

Roofing.—Mr. J. L. Nancarrow, of Grampound, Cornwall, has patented some improvements in roofing, and in tiles for the same. This invention consists in the construction and in the employment of roofing tiles with ridges and grooves, in combination with locking-pieces or tiles made to fit over the parts where two tiles meet, whereby roofs that are constructed with tiles and locking-pieces are rendered very durable and perfectly waterproof, while at the same time the cross-laths now used may be dispensed with; a nail, with cup-shaped head and leather-washer, is described.

SCHOOL BOARDS.

London.—The tender of Mr. R. Mann (5,943*l.*) being the lowest on the list already given by us, for the erection of a school for 807 children in Monte Video-place, Marylebone, has been accepted by the Board; and a further expenditure of 614*l.* 9s. 1d. has been sanctioned for extra foundations to the Orange-street School, Southwark.

Croydon. — The finance committee's report recommended a list of instructions to be given to the architects who were invited to send in their plans for a group of schools to be erected at South Norwood, and to accommodate 585 children. The report having been read, Dr. Lanchester expressed his opinion on the estimated number of children that these schools were about to provide for, by saying that he thought the Board were providing for a considerable number more than was really required; and the chairman explained that the committee had gone carefully into the matter, and had come to the conclusion that that would be about the number that would require accommodation. It also recommended that the Board should erect a residence for the head teacher, at a cost not exceeding 400*l.* The report was ultimately adopted.

THE OPEN SPACES IN HACKNEY.

There is a possibility of the several open spaces in Hackney being shortly laid out for recreation purposes. Mr. Runtz stated at the meeting of the Hackney Board of Works last week, that there were still considerable difficulties to contend with in the matter, as the lord of the manor claimed 40,000*l.* in consideration of his rights over Hackney Downs. He then added that it was provided by a clause in the East London Railway Bill that the Company should give up a foot of ground contiguous to the common for every foot of ground they took from the common in constructing their line, and the conveyances for the carrying out of this arrangement were all ready for signature. It was therefore to be expected that something would shortly be done for the improvement of the several open spaces in the district, dealt with in the Act of last session, although it was probable that before proceeding to lay them out as recreation grounds for the public it might be deemed necessary to apply to Parliament for greater powers than the Board at present possessed.

SHAMS.

Sir,—Will you kindly allow me space to make a few observations on the "Defence of Shams" in your issue of the 27th ult. I fail to see the application of the paragraph about the Vienna awards, and the inferiority of our art manufactures to those of the Continent (except we are meant to infer that theirs are all shams), and with the vague statement about "years ago," I leave it for your readers to analyze for themselves.

Your correspondent then states a truism, and proceeds to try and pervert it by by-play about Adam and Eve and chignons. "Art," he says, "is nature's handmaid, and her mission is to beautify," which I think few would care to dispute; but beautify what? surely not Nature,—paint the rose or the lily!

No, the mission of art is to beautify those things which man has found necessary to his altered wants since the time when "innocently unadorned," and which are not provided by nature, viz., houses, clothing, &c.

To do this with any degree of success, art must sit humbly at the feet of her great mistress, and study her handiworks.

But I should inflict a long letter upon you if I treated your correspondent's arguments *in extenso* (especially those about the adornments of the fair sex); and as in my opinion they are not worthy of it,—I do not mean the fair sex, but the arguments,—I will confine myself to general remarks. He speaks in the course of his letter about high art; but I venture to opine that under the system he proposes there would be but little left. High art is worthy to be, though it is not necessarily, executed in the noblest and most permanent materials; its glory is to be not for a day, but for all time; it can never become popular.

Cheap jewelry, stamped all from one die, may be very pretty, but is not to be named in the same day as the works at which the old masters so lovingly and patiently wrought. No; let your correspondent cover himself and all his belongings, if he chooses, with cheap jewelry, paint, Dutch metal, and shams, as he calls them, generally, but let him not take credit to himself that by so doing he is forwarding the best interests of art.

In conclusion, let us, by all means, as your correspondent desires, have "a more general distribution of God's gifts," and develop the social and domestic arts to the uttermost.

God intended His gifts for all; we shall be doing His will by placing them, or in default the best representations of them that we can produce, within the reach of all, that all may praise *Him*, and glory in *His* works.

But let us in so doing provide things honest in the sight of all men, and avoid *shams*, nor call *them* God's gifts; for they are of the devil, who was a liar from the beginning, and the father of all lies—no "humanizing influence" can come from him.

T. Fred. Proud.

ARCHITECTURAL STUDENTSHIPS AT L'ÉCOLE DES BEAUX ARTS, PARIS.

Pupils who have worked through a preparatory course under professors in the *ateliers* of recognised architects are, after a stringent competitive examination, in which drawing and design, mathematics, and history are the chief subjects, admitted to a further two years' course of instruction carried on at L'École by a staff of professors under the direction of the Minister of Fine Arts. Last autumn, the number of pupils who presented themselves for the preliminary examination was 106. Of these, thirty-three were declared admissible for the further examination, and ultimately twenty-two were received. This autumn, ninety-five presented themselves, forty-nine were declared admissible, and thirty-five passed the final ordeals, the eleventh in order of merit being Mr. Alfred Frampton, of Winchester, a pupil of M. Laisné.

ST. GEORGE'S BURIAL GROUND.

In the most valuable position of the West End, this shut-up cemetery covers over five acres of ground, bounded by St. George's-terrace on the south, Upper Berkeley-street on the north, Connaught-square on the east, and Albion-street on the west.

An old brick mortuary-house, with sepulchral vaults beneath, and two or three *living-chambers* for the custodian on the ground-floor, covers a width of over 100 ft., with frontage to Hyde Park. The building is closed and its offices are defunct; and save that there are a few trees vegetating at intervals, nothing can be more lugubrious than the aspect of this large space, which is thickly planted with tombstones, bristling in varied forms and slantendiculars throughout the whole enceinte.

A double range of wall, with a footway interval of 4 ft., surrounds the whole, in the form of a parallelogram. The path is reserved as a policeman's beat, giving employment to two of the force, as a dead march, for the protection of this *Campo Santo*.

Nothing can be more revolting to good residential houses than the sombre view of a shut-up cemetery; and there are between eighty and ninety valuable residences built close to and overlooking this otherwise concealed aceldama.

Is there any reason wherefore this valuable space should not be utilised, the tombs laid flat, the grounds beautified (say after the fashion of Hyde Park borders), and the costly frontages for four large houses, facing Hyde Park, turned to profitable account? The old mortuary-house, too, should be cleared away, and the coffins in its vaults transferred to a simple mausoleum in the centre of the grounds.

A front entrance should be reserved on the Hyde Park side, there being already an opening next Albion-street, on the west; and there might be one for traverse-way, out of Lower Berkeley-street. This would conduce much to public convenience, and reanimate the present slumbering waste.

Many ancient churches in the City have lately been secularised, and burial-grounds thrown open, giving space for the erection of utilitarian structures. In fact, as the civic population only occupy houses as offices, residing without the walls, congregations became so scant on the Sabbath, that the vicars might have commenced service after Swift's fashion, addressing "Dearly beloved Roger."

The disposal or adoption of this "*terra clausa*" is altogether at the discretion of the Vestry Board of St. George's, Hanover-square; and if they see that a profit can be made, more than adequate to repay outlay and management, whilst it would confer upon vicinal property and the public of that locality an inestimable boon, surely they will not hesitate to carry out so palpable an improvement.

It is right to observe that, so far as relates to the condition of the ground, under the management of one sole custodian, as much has been done as one individual could effect unaided: he has planted several trees, and formed some small flower-beds near his desolate abode.

Quondam.

GAS AS FUEL.

Twenty years since, when a cheaper fuel than coal was really not much needed, attempts were nevertheless made to obtain something more cleanly, if not more economical, than the old and wasteful domestic arrangements; and we remember, about that time, or at least many years ago, of going to see an ingenious gas-fire (described in the *Builder*), and invented by Mr. Bachhoffner, then of the Polytechnic, if we rightly recollect, or of the Coliseum in the Regent's Park, after he left the Polytechnic. This fire was exhibited by Mr. Defries, in Regent-street. It was a brilliant imitation of a lighted domestic fire, made with gas, and studded with some incombustible mineral substance,—talc or mica, if we mistake not. Nothing much better than this is done now. Surely the time has now come for repeating some such experiments, and of really obtaining, in one way or another, an economical application of gas, on an extensive scale, to domestic uses. The public will now be forced to give more heed to such improvements in house firing than heretofore; and if such fires can now be used with more economy than coal, there will be the additional advantages of cleanliness and readiness in their use. Indeed, the readiness and convenience of lighting up, raising, lowering, and extinguishing such fires, must be taken into consideration in an economical view no less than as a convenience and an improvement. As a hint, we may remind inventors that clay lumps acted on by gas may store the heat and give a useful glow, and that some use might be made of lime in this way for heat as it has been for light.

FAILURE IN PORTLAND CEMENT.

Sir,—In answer to your correspondent of last week, "W. P.," I beg to differ in many points. His theory is right, but the practice is not, for the want of time being allowed, as we sometimes receive an order one day, and have to execute it the next. How is it possible to have cement three weeks in a bin under those circumstances? I quite agree with "W. P." respecting finishing in one coat; also the sifting of the cement, which ought to be done by the manufacturer; ditto the sand; and as regards the best cement only being used, no bad should be made.

This is my remedy,—That the manufacturer should provide places large enough to expose the cement for a fortnight before being sent out, similar to brewers keeping their beer a certain time before sending it for use. I contend the manufacturer is responsible to the merchant, and the merchant to the purchaser in the event of a failure.

A Previous Sufferer.

ACCIDENTS.

Destruction of Ardvererikie Castle by Fire.—News from Fort William states that the Castle of Ardvererikie, formerly the residence of the Marquis of Abercorn, and in which the Queen and the Prince Consort passed the autumn of 1847, has been almost wholly destroyed by fire. The castle is now the property of Sir John Ramsden, M.P. Sir John and Lady Ramsden, Mr. Fraser M'Intosh, and Mr. Rhind, architect, Edinburgh, were staying at the castle. The only portion saved is that part containing the rooms which were occupied by her Majesty, but all the furniture and valuable paintings, including some of Landseer's, were totally destroyed. For three years past extensive additions have been made to the building, and these have been but recently finished. The paintings by Landseer which are destroyed included a number of life-size wall etchings which were painted by the deceased artist when a guest at the castle.

They were all subjects connected with the chase, and were regarded as of inestimable value.

Serious Scaffold Accident in Glasgow.—For the purpose of repairing the roof of a house in West George-street, Glasgow, a large wooden scaffold was erected, supported by beams projecting from the roof, and five masons were working on it when the supports at one of the ends gave way, precipitating the men to the ground, 20 ft. below. Two of them were severely injured, but it is not expected any of the cases will prove fatal.

Two Men Buried Alive near West Hartlepool. At Mr. J. Lisle's brickyard, Cowpen Bewley, near West Hartlepool, two young men were engaged in digging out clay for the manufacture of bricks, when, after they had attained a depth of more than 12 ft., the earth above them suddenly gave way, and before any effectual warning could be conveyed to them the two poor fellows were completely buried beneath the falling mass, which weighed some tons. An alarm was raised, and a number of their fellow-workmen set to work vigorously to dig them out, but before they were extricated life was extinct.

THE NEW PATENT AUTOMATIC TILE MAKER.

Messrs. Maw, of Broseley, have just perfected and patented an automatic apparatus for working screw-presses by steam or other mechanical power. The invention is for the purpose of making tiles from powdered clay, by the method known as the "dry process," and the contrivance seems to combine the force, elasticity, and other advantages which manual labour alone has hitherto been supposed to give. The peculiar nature of the process for which the machine has been invented requires the delivery of blows of unequal length; and for striking the hardest blow the press runs down from its highest elevation, rebounds a short distance, as though to survey the effect, and then, as if finding that a more gentle blow is required to complete the work, it again descends and gives the final pressure to the clay. It is stated by practical authorities that the machine is applicable to other purposes in which screw-presses are employed.

THE IMPROVEMENTS AT THE LAMBETH VESTRY-HALL.

The alterations and improvements at the Lambeth Vestry-hall, which have been for some months in progress, are now completed. They comprise the re-arrangement of several of the offices and apartments, together with the construction of rooms for the keeper. The Board-room has also been ventilated on a new principle, which is regarded as a very material improvement. It is, however, confidently believed that in consequence of the rapidly-increasing population of the parish, which covers an unusually large area, an entirely new building will shortly have to be erected in a more central position than the present hall in Kennington-road. The parish extends to Norwood, and several members have to come from that district.

THE FALL OF CHIMNEY-SHAFT NEAR GRAVESEND.

On Monday last the coroner for the district resumed the inquiry relative to the death of the men who died from injuries received by the partial fall of a shaft at the unfinished cement works of Messrs. J. C. Gostling & Co., Northfleet, near Gravesend.

Mr. John Cubitt Gostling, one of the firm, said, Mr. Blagburn, the contractor, was a professed shaft-builder, and was recommended to them by a firm in London, for whom he had built shafts. Their first notion was to build a shaft of about 120 ft., but in consequence of opposition by persons in the neighbourhood, they were compelled either to build the shaft much higher, or to submit to claims for compensation. They then entered into an arrangement with Mr. Blagburn for labour only, at 500*l.*, they finding the materials. The shaft was to be 220 ft. high; diameter at the base, 22 ft., from a base of 30 ft. square; the outside measurement at the top being 11 ft. The thickness of wall at the base was 3 ft. 9 in.: at 26 ft. 3 in. the thickness was 3 ft. 4½ in.; at 52 ft. 6 in. it was 3 ft.; at 78 ft. 9 in., 2 ft. 7½ in.; at 105 ft. 2 ft. 3 in.; at 131 ft. 3 in., 1 ft. 10½ in.; at 157 ft. 6 in., 1 ft. 6 in.; at 183 ft. 9 in., 14 in., and it was carried on to the top at 14 in.

Mr. Gostling gave statistics of several high chimneys, showing that the thickness of the walls of their shaft was upon an average not less than one-third greater than the chimneys named. The principal part of the bricks consisted of Rutter's paviors, or the best picked stocks. The best Dorking greystone lime was used with the best Thames sand; every few courses being grouted in with new Portland cement. Mr. Blagburn exercised his discretion as to the rate at which the work should proceed. It was commenced in the early part of June, and finished in fair weather in about sixteen weeks. Witness examined the work daily, and never discovered any defect. The contract was not put up to competition.

Mr. James Cubitt, architect, said he made the drawings and superintended the building. He did not think the rate of progress excessive considering the fine weather. He saw it plumbed the night before the accident, but discovered no defect. The materials employed were excellent. He could give no opinion as to the cause of the accident. He had formed a slight conjecture, which was that the working of the derrick at the top might have interfered with the setting of the cement in the cap. The weight of the shaft was 1,674 tons, and the cap weighed 19 tons 3 cwt.

Mr. William F. Meakin, architect, said he had examined the remains of the shaft. The proportions of the shaft were correct, and there was an excess of thickness in the walls, and consequent strength over other shafts of the same nature. The materials were perfect, and the workmanship of the very best. There had been no filling in with bats or rubble.

Jonathan Ward, foreman to Messrs. Gostling, gave evidence as to the excellence of the material and the work.

Mr. Blagburn, the contractor, was present, but being still weak, and suffering from the injuries he received, he was not formally examined. He, however, answered a few questions as to the shafts he had built in and near London. He could not account for the accident.

His son was next called, and said he had worked on the shaft from its commencement, and plumbed it about half an hour before the accident. He was about to ascend when the accident occurred, and he was knocked down insensible. They had first-rate materials to work with.

Two bricklayers, brothers of the deceased man Bruce, were examined at their own request, and stated that they considered the head or cap was too heavy, and that this "swagged" the shaft over.

Mr. Meakin, recalled, said he considered this quite erroneous. If it swayed it must swing round. The effect of the cap being too heavy would be, if possible, to crush the brickwork beneath.

Mr. Cubitt said the cap having remained all the previous night, its weakest time, would not be likely to collapse when the parapet was put on, for this would have the effect of strengthening it.

The Coroner having summed up, the jury retired to consider their verdict, and after consulting for about twenty minutes, they found that the men were accidentally killed, the Coroner remarking that he agreed with the verdict. The jury also expressed their sympathy with Messrs. Gostling and with the relatives of the deceased."

A correspondent inquires if the cement used had anything to do with the failure.

PLUMBERS' JOINTS.

In view of the damage done by plumbers and their fires, Messrs. Merryweather & Sons have perfected a lead-burning machine, an apparatus that joins lead edge to edge by means of a gas jet, produced from sulphuric acid and zinc. There is no fire-pot used, neither is there any solder. In addition to the security against fire, they claim that a great saving is effected, for while solder is at least 112*s.* per cwt., lead is only 25*s.* per cwt.; and of the latter there is not one-third used to make a joint as of solder. The comparative cost, according to Messrs. Merryweather, stands thus:—

By lead-burning process.

	s.	d.
One man and one boy will joint 90 ft. of lead on a roof in one day, say, wages	9	0
Strip lead, including waste, 30 lb.	7	0
Use of Machine	1	0
	17	0

By soldering process.

	£.	s.	d.
Two men will joint 90 ft. of lead on a roof in three days, say wages	1	16	0
Solder, 67 lb. at 1*s.*	3	7	0
Firing (on the roof) three days, for heating irons, melting solder, lamp black, &c., 1*s.* 6*d.*	0	4	6
	5	7	6

The cost of the machine is 26*l.*

LIGHTNING AND LIGHTNING-RODS.

The report of the paper by Mr. John M. Mott on this subject, read before the Meteorological Section of the Franklin Institute, has been concluded in the *Journal* of the Institute. The summary is as follows:—

"1st. Lightning-rods, as usually erected, do not afford much protection.

2nd. Insulators, glasses, at the points of support, are of no use in any case; they destroy the most valuable influence of the rod, and may, under certain circumstances, be the cause of most terrific and destructive return strokes.

3rd. The conducting power of lightning-rods is proportional to their solid contents, or sectional area, with similar metals of equal lengths, and not to their surfaces.

4th. A lightning-rod should have the conducting power of a copper rod, one-half inch square, and perfect metallic union of all its parts. A rod made exclusively from copper wires, if of sufficient size, constitutes one which is perfect in theory.

5th. Sharp points for the upper termination of rods are necessary. Rods are of but little value without them. Points should be plated to prevent oxidation. They are also of value when used at the lower terminus of the rod.

6th. It is necessary to place a point at each gable, chimney and ventilator; to connect all together; to connect the rod with metallic roofs, gutters, valleys, steam-pipes, gas-pipes, water-pipes, speaking-tubes, and other permanent metallic bodies about buildings, and the more numerous the connexions with the earth the better.

7th. The rod must be attached directly to the building, the closer the better. It must not be insulated by being passed through or over rings of glass, horn, or other non-conducting substances, nor be placed at a distance from the object to be protected.

8th. Ground rods must have two or more branches penetrating the earth to permanent moisture; must extend below the foundation walls, or the bottom of the cellar. In some instances, where it is difficult to reach moist earth, they must be imbedded in charcoal.

9th. Lightning-rods, constructed and erected in accordance with the foregoing principles, will afford full protection in the hour of danger, and their use is strongly urged as a necessary means of safety.

THE BEHAVIOUR OF CONCRETE IN WALLS.

Sir,—Your issue of December 28th, 1872, contained an advertisement of "information wanted of concrete houses built prior to or say in 1865." If correspondents would furnish information as to how such houses have stood the test of eight or ten years, it would be well. I am a believer in concrete, but so much carelessness is at times permitted, that it would be interesting to hear some experiences in the matter. A. B.

TERRA COTTA.

Sir,—We were glad to see the letter of your correspondent, "Alpha," on this subject, in your last week's issue. The praise that he accords is well merited, and, as manufacturers of terra cotta, we may observe that his statements are perfectly correct as to the varied forms and combinations into which this material may be worked: the limits to its use are, in fact, boundless, and its small cost, as compared with stone, overcomes many of the difficulties that arise where stone is to be employed.

We hope that "Alpha's" letter will call forth other expressions of opinion on the subject. It is for architects, by new designs, to assist in introducing so valuable, because economical, a material, "both for internal and external decoration" as "terra cotta."

Henry Sharp & Jones.

A BUILDER'S DISPUTE.

In the Wandsworth County Court, an action, Hall *v.* Effer, was brought to recover 15*l.* 3*s.* 9*d.* for work done and use of scaffolding. A set-off was pleaded.

The Judge ruled that in this case the set-off could not be heard, and suggested that it should be withdrawn.

Mr. Jones, for defendant, said the settlement between the parties had better be referred to two surveyors to be agreed upon.

Plaintiff would not agree to the adoption of such a course, stating that he could prove his claim. He stated that he was engaged by defendant to construct certain brickwork at St. Joseph's College, Clapham. He received 85*l.* for the work he did, leaving 9*l.* 2*s.* 10*d.* unpaid; he had a verbal contract with defendant to do certain work in Southcott-road, Clapham, for 35*l.*; there was a balance of 3*l.* 10*s.* unpaid upon that. He left some scaffolding upon the work, which the defendant refused to give up; he had taken proceedings in the police-court to recover it, but was not successful; he now charged 2*l.* 10*s.* 7*d.* for the use of it, making the whole of the amount claimed. He had had the work measured by an experienced man in order to arrive at the conclusions he had come to; he admitted that his part of the work ought to have been completed at the expiration of six or seven weeks' time. It was not his fault that the work was delayed, but the defendant's, who had not got the ground out for him.

Mr. Effer stated that he was a builder; he employed Hall to do certain brickwork for him; the time allowed was six or seven weeks, but it was not done in nine weeks. It was necessary that it should be done in a shorter time, as he was allowed only thirteen weeks to do the whole of the work in. He complained to the plaintiff of the delay he was causing several times; each time he promised to put on more men, but he did not do so; there were only plaintiff and another at the job. At last he had to employ men to do the pointing. Plaintiff sent some men to take the scaffolding down; they did it in such a clumsy way as to do injury to the work, and threatened if he interfered both jobs would be left unfinished.

Mr. Hansom, the architect of the building, was called, and stated that he had repeatedly to complain of the manner in which the plaintiff was doing his work, both to Hall and the defendant; at last he threatened to have it done himself. There was always a want of sufficient men to do it quickly.

After hearing evidence upon the measurement of the work done, a verdict was given for the plaintiff for 5*l.* 6*s.*, —about half the amount claimed for work done.

ANCIENT CITIES IN INDIA.

Coins and other antiquities have been found in the ruins of Vinjrote. Government has ordered that they be submitted for examination to the Royal Asiatic Society,—the Bombay branch it is presumed. A note on the ruins at Vinjrote has been made by Mr. F. Robertson, officiating executive engineer, Rohti division, Indus Valley State Railway, in which he says:

"The ruins of Vinjrote are marked on the Revenue Survey Map of Scinde. They are about half a mile from the Reni Nullah, and two from the boundary of Bhawulpoor; the sand-hills commence immediately beyond them. There is a little cultivation near there after a good flood; but the soil reeks with saltpetre in most places, particularly among the ruins. The general aspect of the place is a number of hillocks of various sizes strewn over with pieces of brick, for the most part vitrified. The boundaries are not well enough defined to give any particular

size, but mounds containing bricks are found over a width of quite one mile and a half.

Up to the present time the excavations have been of a desultory character, the work being paid for by the quantity of bricks collected. The men confined themselves to collecting the bricks from the surface of the ground, and digging up outlying walls, so that the real interiors of the mounds remain to be explored. It is to be hoped that these will contain the bulk of the remains, and that what has already turned up is accidental. There are only two mounds in which any signs of a building of importance have been laid bare. One is the largest mound in the place. The other is of much greater interest, and I think was a temple of some importance."

Among the objects of interest found at Vinjrote is "a brick on which the following inscription was scratched rudely. . . [Omitted.] The purport of which appears to be that 'Sultan Alexander and Shah Alum were great men, and that Senesi was also. Kaligur Abouru Mistry made this.' Date unintelligible."

There are other ruins of interest on the Indus Valley line.

VALUE OF LAND IN MANCHESTER.

An inquiry has taken place before the sheriff's assessor (Mr. J. J. Aston) and a special jury, at the Sheriff's Court, in the Assize Courts, Strangeways, as to the value of a plot of land in Great Mount-street, required for the purposes of the new railway station fronting to Windmill-street, being constructed by the Cheshire Lines Committee. Mr. John Edwards (instructed by Messrs. Lingards & Newby) appeared on behalf of the committee, and Mr. Higgin, Q.C., instructed by Messrs. Makinson & Son, on behalf of the owners. The property in question is situated between Great Mount-street and Rainforth-street, and contains about 320 yards of net land. Four witnesses, including Mr. Thomas Acton, the auctioneer, were called on behalf of the owners, and stated that in their opinion the property was worth over 5,000*l*., Mr. Acton putting down its value at 5,644*l*., and expressing an opinion that land in the neighbourhood of Great Mount-street was worth, for warehouse sites, 12*l*. a yard to day. On behalf of the committee three witnesses were called, who stated that in their opinion that part of the land fronting to Rainforth-street was worth 6*l*. a yard, while that fronting to Great Mount-street was worth 8*l*. a yard. The valuations of these three gentlemen averaged 2,750*l*. After the counsel on each side had addressed the assessor, and that gentleman had summed up the case to the jury, they, after some little consideration, returned a verdict for 2,857*l*., which, after deducting 20 per cent. on account of the property being taken compulsorily, shows that, in the opinion of the jury, the land was worth rather more than 7*l*. a square yard throughout.

THE SHAFTESBURY PARK ESTATE.

This estate, which is the property of the Artizans', Labourers', and General Dwellings Company, comprises about 40 acres, and is now laid out in a series of oblong blocks or terraces, for the erection of 1,200 houses, of which about 350 have been built since the first stone was laid, last year. The roads or streets diverge at right angles, and are 40 ft. wide, with pavements of asphalte, both roads and pavements being finished as the building goes on. The design of the houses partakes somewhat of the domestic Gothic or Tudor, though no particular style has been strictly followed by the architect. The houses are built in four grades, containing five, six, seven, and eight rooms respectively. The rents range from 5s. 6d. to 9s. 6d. per week, including rates and taxes; or, if the houses are purchased by the occupiers, the prices are from 150*l*. to 300*l*. each house. When the houses are purchased, the purchasers usually pay down a certain sum, the remainder of the purchase money being paid weekly or quarterly in advance. The streets throughout the estate are to be planted with trees (one street is already so planted), forming miniature boulevards. About three acres have been reserved in the centre of the estate for recreative purposes, and a gymnasium. The estate will have its own schools, library, and baths. A site has also been reserved for a co-operative store. When completed there will be entrance gates at the approaches from Battersea Bridge-road at one end, and Elcho-road at the other, and also at the centre of the estate, Greyshall-road. A distinctive feature is that there are to be no public houses on the estate, and this feature, it is said, is highly approved by the working men themselves.

CHURCH-BUILDING NEWS.

Eye.—The re-opening of Eye Church, after complete restoration, has taken place. Mr. Chick, of Hereford, surveyed the fabric, and stated the tower to be in a most dangerous condition, and advised that immediate steps should be taken with a view to rebuilding it. Mr. Rodney then instructed Mr. Chick to make plans and specifications for rebuilding the tower and restoring the church. When operations were commenced the church was in a wretched condition. The walls and foundations were in a literally crumbling state, cracked in all directions. The floor had been raised 2 ft. 6 in. above the original level to hide the defective foundations. The tie-beams of the roofs had been cut away, and the lateral thrust was pushing the arcades and walls apart. The clearstory windows had been destroyed, and the building was a sad sight. All this dilapidation has been amended. The execution of the work was carried out by Mr. John Thompson, contractor, Peterborough. The large box-pews with which the church was filled were removed, and the floors reduced to their original levels. The bases of the arcade columns had been crushed by the great weight placed upon them. These have all been underpinned, renewed, or repaired. The south arcade has been rebuilt, and the old oak roofs restored. A new tower has been built, as nearly as possible after the original design. This made necessary the removal of the temporary western end of the church and gallery, and thus the area of the tower is added to the nave, giving much extra room for seats. A new arcade has been erected between the chancel and mortuary chapel, and oak parclose screens fixed therein. The church has been re-seated with oak seats. The old altar-tombs in the mortuary chapel are being restored at the sole expense of Sir George Cornewall, bart., of Moccas. The total cost of the work, exclusive of a new east window, is about 2,750*l*.

Kirkby Wiske.—The parish church has been reopened, after a restoration under the superintendence of Mr. G. E. Street, R.A. Before the restoration the roof was low and underdrawn; the east window had been despoiled of its tracery; the arch of the tower was filled with a lath-and-plaster screen and the floor covered with high pews of various shapes. Fortunately one of the seat-ends of former days was discovered amongst the framework of the pews, and this has been reproduced in the new seats. The work of restoration has lasted for sixteen months. The north and south aisle walls and the north-east buttresses of the chancel have been rebuilt, the pillars of the nave underpinned, and the roof raised to its original pitch. The chancel-arch has been raised some 6 ft. The seats of the chancel, the communion-table, pulpit, and side screen are of oak, the nave-seats being of pitch pine, and the roof of red deal. The floor is laid with Godwin's tiles. The work has been done by Messrs. J. & H. Thorp & Sons, of Leeds. Besides the general subscriptions, which amount to upwards of 2,500*l*., there have been many special gifts.

Bingham.—The church of St. Mary and All Saints has been reopened after restoration. The present restoration follows one that took place twenty-five years ago under the superintendence of Sir Gilbert Scott; but it still had an old low roof, to remove which, and to give a lofty appearance to the exterior, has been the chief feature of the present restoration. Several of the windows have been painted by Mrs. Miles, whilst the carving of the stone corbels lining the nave and transepts is the work of Miss Miles. The architect of the present restoration is Mr. F. Miles, son of the rector. The roof of the nave and transepts has been raised 15 ft., making the present height 40 ft.

Weymouth.—The chief stone of Christ Church has been laid. Nearly 5,000*l*. have been collected, but there are still 1,800*l*. required. The purchase of freehold, and the expense of laying a foundation, have cost 1,700*l*., whilst the tender for the construction of the building was for 4,100*l*. At present it is proposed only to erect a section of the church,—about two-thirds,—carrying out the remainder at some future time. The structure will, however, look complete, for when an addition is made to it a wall only will have to be pulled down. The new church faces the railway station, and abuts on two streets, King-street and Park-street, the centre of a large and industrial class of the population. It will be a Gothic structure from the designs of Mr. E. Christian, of London; Mr. Thomas Dodson, of Weymouth, being the builder. The church will be built of Portland stone in random courses, with dressings of Doulting stone from the quarries of Mr. C. Trask. The interior will be lined with red bricks, having courses of grey bands running round the walls and arches, which will be further relieved by projecting bands of grey bricks, the whole of which were made in the contractor's own yards. This church will be materially different in one respect from the others in the town; for it is intended to have a tower, which will be prepared for a peal of bells,—an adornment in which the existing churches of Weymouth are deficient,—each possessing but a solitary bell. It has been alleged as the reason for this that the sanitary nature of the soil would not allow of a peal being hung in a tower; but in the new church this has been provided for, as a foundation of concrete over the whole area of the church has been laid 6 ft. deep, and the tower will be strengthened by 3,600 poles, 8 ft. in length, driven under the concrete. The main arches will be supported by Portland stone pillars, the shafts being of Pennant stone, in one piece, 7 ft. in length and 2 ft. in diameter, from the quarries of Mr. F. Greenway, Down-end, Bristol. The Devon marble columns for the chancel-arch are from the quarries of Messrs. Goad, Stonehouse, Plymouth. The erection of the church was commenced in May last, so that now a great portion of the walls is nearly completed.

Harleston.—Pulham Church is undergoing restoration. It was commenced last April, and, it is expected, will be completed, so far as it is proposed at present to go, by the beginning of November. At the cost of 370*l*., the rector is himself restoring the chancel, the east window of which has been promised to be supplied by one of the landowners, Mr. Cole. The bay above the chancel is also being redecorated. Besides repainting the walls, an addition is being made by the building of an organ-chamber and vestry with flint facings and stone dressings. A vault beneath the chamber is being fitted with a hot-air heating apparatus. The roofs of the nave and south aisle are undergoing repair, and new doors and windows will be put in. The cost of this work will be 1,260*l*. Of this amount the sum of 1,050*l*. have already been contributed. When all this work is done, there will still remain the reseating, at a cost of about 600*l*. Messrs. Vine & Grimwood have the contract; the architect is Mr. R. M. Phipson.

Kirk Ireton.—The church of the Holy Trinity, at Kirk Ireton, has, during the last six months, been re-opened, after undergoing a restoration, internally and externally. The fabric is supposed to be upwards of 700 years old, the nave and side aisles being of Norman architecture. The chancel is of more recent date, having been erected not more than 300 years, and is of Gothic style. The architect engaged for the restoration was Mr. Wm. Jolley, of the firm of Evans & Jolley, architects, Derby, and the building-work was undertaken by two masons in the village, Messrs. Wm. and Benjamin Doxey; the contract for the floors and sittings being let to Mr. Edwin Thompson, of Derby.

Woolstone, near Cheltenham. — The parish church of this village has been re-opened for divine service. Amongst the most prominent of the restorations are the new roofing of the nave, —the restoration of the rude, yet highly-interesting niches in the wall,—the entire repewing of the church,—the new reading-desk, pulpit, and seats for the choir,—all of which were done under the direction of Mr. Middleton, of Cheltenham, the architect. The woodwork and carving were executed by Mr. R. L. Boulton, of Cheltenham. In respect to the niches referred to, the Rev. Canon Lysons says:—

"The most singular circumstance connected with this discovery is the fact that the larger of the two niches—that on the right-hand side, for they are of very unequal size—stands upon the capital of an inverted Roman pillar of the Corinthian or Composite order; evidently a portion of a Roman temple, and very similar to those in the rural temple of Clitumnus in Italy. The sequestered position of Woolstone, placed just under the range of the Cotswolds, and in the immediate vicinity of the Camps on Dixon-hill and Nottingham-hill, would render it quite the locality for a rural temple to Pan, which may have stood on this spot. Venerable Bede tells us that 'it was a principle with Gregory the Great that the idol temples were not to be destroyed, but converted into churches.' In his epistle to Melitus on his mission to Britain he says, 'Idol temples are not to be destroyed, but only the idols which are in them. If these edifices be well built, it is desirable that they should be converted from the worship of demons to the use of the true God; for the people, seeing that

their temples are not destroyed, will more easily overcome their prejudices, and acknowledge and adore the Almighty in the places where they have been wont to worship." St. Paul's Cathedral, in London, says Bishop Andrews, was built on the site of the temple of Diana, to which the British name Llan Dian (London) refers. Westminster Abbey was built on the site of the temple of Apollo; St. Alban's on that of Apollo and Mercury; St. Mary-at-Bow, Bishopsgate Church, St. Martin's-in-the-Fields, St. Mary Wolnoth, were all built on sites of Roman temples. The Abbey Church at Bath was built on the site of the temple of Minerva. York and Lincoln Cathedrals were built on the sites of Roman temples, and a Roman pavement was discovered in the area of Gloucester Cathedral in 1867."

Nun Monkton (*near York*).—The church of Nun Monkton, after having been neglected for three centuries, has at length been restored and re-opened. The church has been restored by Messrs. Weatherley & Rymer, masons and builders, of York, the sole contractors, under the direction of Mr. J. W. Walton, architect, London. The old flooring was taken up, and then laid down in concrete. The passage or aisle up the central part of the nave is of coloured tiles,—black, blue, red, and buff. The seats on each side are open, of oak, with square-headed ends, pierced below with trefoils within a circle. The east window is of three lancet lights, that in the centre being much loftier than those at the sides. They are filled in with stained glass, by Messrs. Morris & Son, of London. The subjects treated of are illustrative of the life of the Virgin Mary. On the south side of the chancel is a memorial window to Captain W. Crawhall. The subject is Christ walking on the Sea, with the Scriptural passage, "It is I, be not afraid." On the north side is another window of a similar character. It illustrates the Raising of Jairus's Daughter. This window is by Wailes, of Newcastle. The entire amount expended in connexion with the restoration has been upwards of 4,000*l*.

South Malling (*Lewes*).—The parish church of South Malling has been restored and reopened. The plans were furnished by Mr. Philip Currey, and Messrs. Thorpe & Son, builders, carried them out. The old tall-backed pews have been removed throughout the church, and in their stead appear open benches of stained deal. The gallery between the nave and the tower has been abolished, bringing to light the arch, and throwing the lower part of the tower into the church. The ceiling has been repaired, and ribbed with stained timber, and the nave is lighted with new windows, with green cathedral glass. On the north side of the church has been erected a new organ-chamber and vestry, and also a vault for heating apparatus.

ROMAN CATHOLIC CHURCH BUILDING NEWS.

Birkenhead.—The present church dedicated to St. Laurence, and situated in Park-street, Birkenhead, is about to be devoted to the purpose of a school, there being a great want of school accommodation in the district, and an effort has been made to raise funds for the erection of a new church to take its place in the parish. A considerable sum has already been subscribed, and a commencement made to the work, the foundation-stone being laid by Bishop O'Reilly, of Liverpool, in the presence of 5,000 or 6,000 spectators. The site of the new church is on a piece of land purchased for the purpose some years ago, adjoining the inclosure in which the present edifice stands. The building will be in the Early English style. At present only the nave is intended to be erected, and its dimensions will be 101 ft. 6 in. long, by 60 ft. broad. The archways, to lead into the future chancel and chapels, will be built now and filled up with walls, to be pulled down hereafter. The chancel is intended to be 45 ft. long by 30 ft. wide. On the Gospel side will stand a roomy organ-chamber, 30 ft. by 22 ft. The church is to be built of Flaybrick-hill stone, with Runcorn red sandstone quoins and dressings. On each side of the nave will be windows, each containing a triplet. At the western entrance will be three large porches and baptistery. Over the roof of the porches, &c., will rise nine long lancet windows, following the angle of the roof, the highest one in the centre being 39 ft. long. There are to be no arches in the interior, but the whole space will be spanned by one single roof of wood and iron. A tower will be added hereafter. The object in view has been to provide as much space as possible at the lowest cost. Hence there is no carved work on the plans, but everything is designed for massive effect. It is expected the building will not cost more than 2,000*l*. The architect is Mr. James O'Bryne, of Liverpool.

Oldham.—The Church of Our Lady and St. Patrick, Oldham, has been re-opened for divine service by Archbishop Manning. In addition to a cleaning which it has undergone, there has been erected a high altar and reredos, which occupy all the fine bays of the sanctuary. The centre bay contains the altar-table, of Sicilian marble, supported by four octagonal columns of dark Devonshire marble, between which, and standing a little backward, are three panels, sculptured to represent the Annunciation, the Coronation of the Blessed Virgin Mary, and the Adoration of the Wise Men. Above the altar-table rises the tabernacle, with a gilded door, and surmounted by a canopy, having, as the terminal of the apex of its front, a carved cross, bearing the sacred monogram. From the centre of the canopy rises a carved pinnacle to the height of 25 ft. Each of the four angles between the bays of the sanctuary contains a clustered shaft with a carved capital, on which stands a life-sized statue of an evangelist. The canopies above the figures terminate in clusters of pinnacles, also 25 ft. high. The five bays of the reredos are divided into fourteen blank tracery panels, each containing the figures of angels bearing symbols, the spandrels being filled with carved foliage. The bays are surmounted by a cornice, with carved and perforated cresting. In the two outer bays are placed oak sedilia benches, also decorated with carving. The whole of the work has been carried out by Messrs. Evan Williams & Millson, sculptors, Manchester, from the designs of Messrs. Goldie & Child, architects, London.

Pendleton. — The foundation stone of St. James's Church, Church-street, Pendleton, has been laid by Dr. Vaughan. The church will be built in the Early English style, and will cost from 5,000*l*. to 6,000*l*. It is estimated to seat about 700 people, and will be 114 ft. long by 52 ft. wide, and its height 60 ft. from the floor to the ridge of the roof. The buildings will include a residence for the clergy, sacristy, choristers' vestry, &c. The architect is Mr. H. E. Tijou, of Manchester, and the church is to be finished by the 1st of October next.

SCHOOL-BUILDING NEWS.

Millwall.—Lord Enfield, M.P., recently presided at the opening of new denominational schools in connexion with St. Luke's, Millwall,—a spot better known as the Isle of Dogs. The schools are unpretending, and they cannot compare with the Board schools of London in completeness of fitting; but they are a great advance upon the buildings which, up to very lately, were thought sufficient for school purposes. They stand a little way from the bank of the river, and possess good separate rooms for boys, girls, and infants, there being space for 192 boys, 192 girls, and 184 infants. Adjoining are good playgrounds and a gymnasium. The schools are from the design of Messrs. Hooper & Lewis. The cost is about 3,000*l*., of which the Bishop of London's Fund gave 900*l*.; the Committee of Council on Education, 693*l*. 10s.; the National Society, 250*l*.; and the Christian Knowledge Society, 152*l*. 10s.; on the condition that the deficit was raised. The Earl of Strafford gave the site and 50*l*. About 500*l*. have still to be raised. It is proposed to open rooms for a reading-room for the sailors and working men in the neighbourhood and for social gatherings.

Sutton St. Nicholas (*Hereford*).—A new school and master's residence have been publicly opened at Sutton. The buildings have been erected by Mr. Charles Evans, builder, Talgarth, for the sum of 415*l*., including the cost of school-desks, and exclusive of the contract for building garden-wall, from the designs and under the supervision of Mr. J. H. Evins, architect, Hereford. The site, though a pleasant rural spot, is not a commanding one, consequently the buildings are seen but on a near approach. The buildings comprise a school-room, 35 ft. by 18 ft.; with lavatory, porch, and necessary offices, and a master's residence. The style is Gothic, adapted to the present period. The walls are built with brick, with dressings of Box-ground Bath stone. The school-room, which is fitted with Colman & Glendenning's desks, is 15 ft. high, ceiled to the collar-joists and rafters, leaving the framing of the principal rafters visible; being stop-chamfered and varnished.

Stourpaine.—New schoolrooms, costing about 600*l*. have been built here without any Government grant. By Lord Rivers a site was granted for the new school, in the centre of the village; his lordship also contributing to the building fund. The school-house and outbuildings are of concrete, finished externally with Portland cement and shingle. The chimney-shafts are of stone, circular, and springing from a square base. The roofs are covered with dark-coloured tiles with ornamental cresting. The entrance-porch, which faces the street, has a half-timbered gable, and the other gables, excepting the class-room, are fitted above the windows with ornamental tiles. The rooms are well lighted and ventilated, the principal apartment being 44 ft. 6 in. long by 18 ft., and the other 20 ft. by 16 ft.; boys and girls having separate lobbies and out-buildings. The windows are of wood, square-headed, except that in the class-room, which is pointed. Several of them have cusped-headed lights. The spirelet over the centre of the main roof serves the purpose of a ventilating shaft. A bell-cote springs from a flying buttress at the angle of the class-room. The design is of the Early Perpendicular type. The interior of the rooms is fitted up with stained-wood desks and forms, and a master's desk in the centre. The cost of the buildings is about 600*l*. The school-rooms and playground are inclosed by a concrete wall, with pillars at intervals of Portland cement. The architect was Mr. James Baker Green, and the builder, Mr. Augustine Green, of Blandford.

Queen Camel.—New schools in this parish have been opened. They are provided for 180 children, and contain three rooms, each 24 ft. by 20 ft. The boys' and girls' schools are separated only by an arch. The rooms have all open timber roofs, with arched principals springing from carved stone corbels, each school being designated by a characteristic head. The exterior is in the Early English style, the windows and the other decorative features being of a simple character. In the centre of the front there is a gable, with a bell-turret on the top, below which is a large three-light window. There is a similar window in the back gable, these two windows lighting the girls' school. The boys' school has a triple lancet window in the west gable, and the infant school has two double-light windows, with circle in the head, and a rose-window in the gable end. The schools are built with white lias stone, with blue lias band courses and Doulting stone dressings, from Messrs. Whitcombe's quarries. The roof is covered with dark-coloured tiles. The schools are set back from the road, from which they are separated by a low wall and an ornamental iron fence on the top, the space between the wall and the building being laid out with shrubs. The playgrounds are in the rear of the schools. The schools are entered from the front by two porches,—one for the girls and infants, and the other for the boys. The walls of each room are lined about 4 ft. high with deal. The desks and benches were supplied by Messrs. Whippell, of Exeter. The rooms are warmed by Gill stoves. The work has been carried out by local tradesmen: the mason's work by Mr. Thomas, the carpenters' and joiners' work by Messrs. Raymond & Son, the ironwork by Mr. Perrott, and the glazing by Mr. Pitman, all of Queen Camel. The schools were designed by Mr. Henry Hall, of London, architect. The total cost (about 1,000*l*.) has been defrayed by Capt. Hervey St. John Mildmay.

Sharlston (*near Wakefield*).—The foundation-stone of a Congregational school-chapel was laid on Tuesday, the 14th inst. The buildings consist of schoolroom, vestry, and out-offices. The school will be in the Gothic style, of red bricks, with Ackworth stone dressings to the buttresses and gables. There will be accommodation for about 300 persons, the room being 57 ft. by 28 ft., and 23 ft. high to the ceiling, which will be over the collar-beams. The roof-timbers are exposed, and the stop chamfering and quatrefoils on collar-beams will be painted, the rest of the woodwork, including boarding round the school, to be varnished. No staining will be used. By fixing a movable partition the room can be divided into boys' and girls' schools, the principal doors being in the centre, so that either department can be entered through the lobby separately. It was originally planned to have a porch, with two distinct inner doors, but as this arrangement proved too costly it was abandoned. The room will be warmed by two open fireplaces, and ventilated by iron pipes walled in the flues, on a new principle, to draw out the foul air. Mr. A. Hamerton, of Wakefield, is the architect; and Mr. Allan Mason, of Purston, near Pontefract, is the contractor for the whole of the works, which will be under

600*l*. Messrs. Ellison & Broadbent, colliery proprietors, generously gave 100*l*., in addition to the land, which cost 50*l*.; and the director of Messrs. Briggs, Son, & Co.'s celebrated Whitwood Collieries gave 100*l*., on condition that the building was used as a day-school, and that it was adequate to the wants of the district.

FROM SCOTLAND.

Edinburgh.—The question of carrying out the proposed improvement of the North Bridge has been before the Lord Provost's committee and a committee of the road trust, in connexion with the estimates which have been received from various contractors for the execution of the work. Of these estimates the lowest was that of Mr. Waddell, of Bathgate.

Bathgate.—For a process of converting peat into fuel, extensive works are being commenced on the grounds of Seafield, near Bathgate. The works are as yet scarcely in full operation, but some excellent fuel, says our authority, the *Weekly Scotsman*, has already been manufactured. The floors of the building are all of iron, in order to insure safety from fire. The machinery has been manufactured by Messrs. Alexander & Turner, Edinburgh. When in full operation, it is expected that at least 200 tons of fuel will be manufactured every working day. The fuel is composed of peat and coal chiefly, with tar, and made into bricks.

Biggar.—The new bridge at the west end of Biggar, over Biggar burn, is now completed, and has been opened for traffic. The roadway, which is 42 ft., exactly double the width of the old bridge, is laid on ten cast-iron girders, bolted together by iron stanchions. The sides are protected by a strong iron railing running into stone pillars at each end. The bridge is on a level with the pavement in front of the adjoining shops, and the approach from the railway station is much easier, the road having been lowered about 4 ft., and the hollow between the old bridge and the town has been so raised as to make a gentle ascent, where a quick rise formerly existed. The work has improved the approach to the town.

Stow.—Messrs. Herbertson, of Galashiels, have commenced operations for the erection of a new church for the parish of Stow, which, when finished, it is said, will be one of the finest in the south of Scotland. The site selected by Mrs. Mitchell, and the late Mr. Mitchell, of Stow, is on a sloping bank above the public road leading to Galashiels, a little south of the village. The building is ornate in character, and the style of the architecture Early Decorated Gothic. Eight hundred and fifty commodious sittings have been provided in the building, which measures internally above 20 ft. in width by about 126 ft. in length, with apsidal end towards the south-east. On the north side of the main body of the church are a transept and small gallery, also a side aisle divided from the nave by stone columns and arched openings. A tower and spire upwards of 140 ft. in height, under which is the principal entrance, rises from the north-west end, and forms the principal feature in the design. The windows will be filled with stained glass. The time for executing the contracts extends over 1874, and the cost of the building will be about 8,000*l*.

Greenock.—The town council have discussed the propriety of erecting a monument to the memory of James Watt. The special committee reported against the monumental pile of stones from all parts of the world in the cemetery, which would cost from 12,000*l*. to 15,000*l*., being continued, but recommended that a bronze statue be erected in Cathcart-square, with these stones as a pedestal, at a cost of from 3,000*l*. to 4,000*l*. Bailie Campbell thought an engineering school should be erected as a memorial, but ultimately the matter was deferred for a month, that the general public may express their opinion as to the best plan.

Dunfermline.—Mr. Andrew Carnegie, of New York, has intimated his willingness to give the sum of 5,000*l*. for the erection of public baths in Dunfermline, of which city he is a native.

Inverness.—A great improvement in this prosperous town is the erection of a number of houses by Mr. Matheson, M.P. (Mr. Ross, architect), extending along Ness-walk from a little above the Suspension Bridge to the Cathedral. These are bolder, but similar in style to those already erected from Mr. Ross's designs opposite the Cathedral, and will prove an addition to the river side. The largest new works at the present time are the station offices. These will occupy the opposite side of the square from the Station Hotel, and will extend from the site occupied by Mr. Pattillo's shop to the Academy gate, and from the front of the station to the line of Academy-street. They will consist of board-room, committee-rooms, offices, &c., on the principal floor, offices and office-stores in the upper floors, and first-class shops on the ground-floor. The buildings will be in the Italian style. The contractors are Mr. Hendry, mason; Messrs. Robertson & Golan, carpenters; Mr. M'Kenzie, plumber; Mr. Falconer, plasterer; Mr. Russel, slater; Mr. Goodwillie, Elgin, sculptor; Messrs. Falconer, iron workers. The cost will be about 10,000*l*. The excavations are already nearly completed. There are also various smaller jobs going on, alterations and improvements. In the country a good deal of work is progressing. Mr. Andrew Fraser, Inverness, has contracted to build a bank at Lochcarron, with banker's house, &c. A sign of the prosperity brought to the town by tourists is the fact that the Station Hotel has already been enlarged three several times, and although now one of the largest, if not the largest hotel north of Aberdeen, the proprietor would willingly add other fifty bedrooms were it not that the railway company require all their ground for their own increasing accommodation. The proprietor of the Cale Hotel has just added several bedrooms to his already large establishment; while the Royal Hotel has been embellished with a new front facing the station, improving that portion of Academy-street between Union-street and the new market. Amongst other new buildings recently erected in the town may be mentioned the new house built by Chief Constable Murray further down Academy-street, and that built by Dr. Fraser in the High-street, opposite the entrance to Lombard-street. Both of these were erected from designs of Messrs. Matthews & Lawrie.

Aberdeen.—A special meeting of the heritors of Old Machar has been held to consider their former decision as to borrowing money to defray the expenses of "stamping out" the dry-rot in the woodwork of the cathedral. After a long and acrimonious discussion, the former resolution to borrow the money was confirmed by 26 to 20 votes. The minority dissented and protested against the decision as being illegal, and those who were members of committee, with one exception, resigned. The meeting broke up in confusion, without coming to any decision as to when the work was to be commenced. Meanwhile, the dry-rot is making rapid progress.

Books Received.

Notes on National Education in Continental Europe. By John F. Moss, Clerk to the Sheffield School Board. London: Simpkin, Marshall, & Co. 1873.

In accordance with instructions from the Sheffield School Board, Mr. Moss visited a large number of public schools in various states on the Continent, and he here gives some account of the information gathered relating to the work in which the School Boards are so deeply interested.

Although his principal object was to ascertain as far as practicable, what points of excellence in the Continental school system could be with advantage introduced in the elementary schools established and controlled under the English Elementary Education Act of 1870, he found it not only useful, but absolutely essential, to see schools of all grades.

In Prussia, Saxony, Bavaria, Austria, and Switzerland, excellent opportunities were afforded of visiting what may be termed typical schools of every class. In Holland and Belgium the author has also seen schools of various grades. His time in France was too limited to admit of the visitation of schools.

He says it would be impossible to visit, however hurriedly, the schools of central Europe, without being impressed with the manifest thoroughness of the work done and with the evident aptitude of the teachers engaged.

Amongst the best elementary school buildings visited was that of the Gemeinde schools in Friedgens Strasse, Berlin. An examination of the building itself amply repaid the visit. The imposing appearance of the exterior, he remarks, scarcely prepared one for the announcement that this was a free school, and he knew of expensive middle-class schools in England not nearly so well fitted up. Accommodation is provided for 2,000 scholars, boys and girls, of equal numbers, in separate departments. There are two spacious entrance-halls, and the corridors dividing the ranges of class-rooms run down the centre of the building. The turnhalle stands apart from the school-building, on one side of the playground, and is exceedingly well supplied with all the most approved gymnastic appliances, in the use of which the scholars displayed an aptitude which amply evidenced the smart training they had undergone. The director's house and teachers' residences are placed at the further end of the playground, and lodging-rooms for the care-taker are provided in the main building. The sanitary arrangements seemed in advance of those in many of the schools he saw, for in this respect he says, "I certainly cannot commend the German schools as models."

The Gewerbeschule of Cologne is of itself a good example of the manner in which education is made to bear directly on the material progress and prosperity of a community. The building, designed by Herr Raschdorff, when Stadt baumeister, is well calculated to convey an impression of the liberality with which the institution is supported. On the façade, a very successful effort in German Renaissance, are tasteful emblematic decorations; whilst the interior is adorned in a style which well becomes a place in which the development of artistic taste and skill is sought to be induced. It would not be difficult to point to an English town of much greater size than Cologne without a single public building of any kind (excepting churches) equal, from an architectural point of view, to this school building. All the rooms are carefully arranged, with the distinct object of making them thoroughly useful for their respective purposes. The drawing galleries are well lighted and profusely supplied with all the necessary appliances, and in the rooms for modelling in clay there is a capital collection of suitable casts. At the further side of the playground is a spacious turnhalle, admirably fitted up, and replete with all the most modern gymnastic appliances. There are about 300 scholars in attendance, though the building would apparently accommodate many more.

The Real Schule in Cologne has a fine pile of buildings and an ample staff of teachers.

The secondary school buildings, like the primary school buildings, are divided into class-rooms, but they have each, in addition, a large assembly-room, which is used on special occasions, as when the periodical examinations are held and certificates distributed, or on the Emperor's birthday. Most of these are beautifully decorated, some of them with fresco paintings. The *aula*, or assembly-room, of the Real Schule in Cologne is embellished with a tablet recording the names of "boys" from the school who have fallen while fighting in the battles of their country. There are attending this school 600 pupils.

In Saxony, on several occasions, Mr. Moss asked to be shown inferior school-buildings; but in every such case he found something being done towards the provision of new premises. Some of these buildings were, indeed, such as would be made to do duty for years to come in England, though the spirit of rivalry would scarcely admit of their continued existence in the face of such imposing piles as have of late years been erected for school purposes in Saxony and Prussia.

Of the manifold methods of warming and ventilation adopted in the various schools visited few appeared to work thoroughly well. If the warming apparatus appeared tolerably satisfactory, the means of ventilation were usually either imperfect or ill-managed. In the Victoria School, for girls, in Berlin, the sanitary arrangements seemed remarkably good, and the ventilation was very well attended to; but there are apparently few of the Prussian schools of which it could be said, as in this case, that the temperature is so carefully regulated that the thermometers placed in each class-room scarcely vary more than two degrees during the whole day.

The school system of Austria is, in many respects, analogous to the methods of Prussia and Saxony. It may safely be affirmed that some of its special schools are excelled by none in the world. In Vienna, the primary and secondary schools appeared to be exceedingly well conducted, and some of the buildings are superior to many of those of the same class visited in Germany. The Commune has, during

the present year, voted 7,000,000 florins for school-building purposes alone.

A Protestant Communal school in Vienna, for which the Emperor of Austria gave the land, and the Commune bore the expense of the erection of the building, deserved special mention, not only as presenting a fine example of the elementary schools of the city, but also on account of the peculiarity of arrangement. The building is placed in the form of a hollow square, with a covered area in the centre. There is accommodation provided for 1,100 children, and both boys and girls use the same playground. Each story has a balcony or gallery extending on all sides of and overlooking the covered area, the basement of which is used as a playground. The class-rooms are lighted from the outer side, and the entrances to them are from the galleries, which are protected by a stone balustrade. All the rooms are well fitted up, and the school furniture is very tastefully designed. Drinking-fountains are placed on every floor, and the ventilation seems very effective.

The Imperial Gymnasium is remarkable for the beauty of its external architecture, as well as for the profusion of the decorations introduced in the interior. The design is Gothic, very carefully treated throughout, and the corridors and staircases have groined ceilings. A gorgeously-decorated *aula* is used for a chapel, as well as for the ordinary purposes of an assembly-room. There are between 600 and 700 students, but the building seems large enough for a much greater number. The class-rooms are of various sizes. Some of them will accommodate 100 students, whilst others serve only for forty. A well-arranged room, with circular gallery, is set apart for chemistry and for other scientific lectures. There is an open playground in the centre of the buildings, and a well-appointed turnhalle in the basement. The total cost of providing this school was 500,000 florins; of this sum 25,000 florins were expended in furnishing. Mr. Moss evidently employed his time well.

Results of an Experimental Inquiry into the Mechanical Properties of Steel. By David Kirkaldy. London: Testing and Experimenting Works, Southwark-street. 1873.

The mechanical properties of steel of different degrees of hardness, and under various conditions, manufactured by Mr. Christian Aspelin, of the Westanfers and Fagersta Works, Sweden, were tested by Mr. Kirkaldy, under his own suggestions and conditions, for the purpose of exhibition at Vienna, where an extensive series of them was sent; and the results are here tabulated with illustrative diagrams. These results were obtained as the most likely to interest and to be of most general use to civil, mechanical, mining, and military engineers, and to be of importance to manufacturers of steel and iron. One series were prepared for, and sent first to, the Paris Exhibition of 1857. Another series are entirely new, and exhibited for the first time. None of those tested have been withheld.

VARIORUM.

The current number of the *Quarterly* includes a very interesting article on "Holland House, Kensington," founded on a work with that title, by Princess Marie Liechtenstein, recently issued for private circulation only.——A second edition of the "Romance of Peasant Life," by F. G. Heath (Cassell & Co.), just now published, includes a fresh chapter on the Elevation of the Peasant. Chapter III., under an unwise, because exaggerated heading, tells the instructive story of the life of George Mitchell, the marble mason. The book can scarcely fail to excite sympathy for the down-trodden class in whose interest it is written.

Proposed New Public Offices at Greenwich.—The Greenwich Board of Works contemplate the erection of new public offices, and at their meeting last week, it was moved that the Board take into consideration the propriety of forming a building committee, to consist of four members for the parish of Greenwich, two members for the parish of St. Paul, Deptford, and two members for the parish of St. Nicholas, Deptford, to search for, and recommend, a site for the purpose of building such offices for the Board's use. The resolution was agreed to, and a committee appointed accordingly.

Miscellanea.

Maddening Drink.—The Superintendent of Colney Hatch Lunatic Asylum confirms the truth of an assertion made in the *Builder* some years since, that the alcoholic and intoxicating principle in modern drinks is not what produces the worst effects on those who use them, but that the toxicants, or poisons, with which they are adulterated for the purpose of producing an effect on the brain *like* intoxication, but far more dangerous, are the real sources of those maddening effects which fill the lunatic asylums and the prisons. The superintendent, Dr. Sheppard, is surprised that at a time when milkmen are pulled up for adulterating milk with water, the preparers of gin and beer, &c., are allowed to poison the public drinks with fusel oil, and such like abominations, without stint or hindrance. Has not the comparative difficulty in analysing organic substances something to do with this? We do not agree, however, with Dr. Sheppard when he maintains that the diseased craving of many for strong drinks is incurable. We have known of the cure of such craving by the simple use daily of certain bitters, such as camomile flowers and quinine, or Peruvian bark, continued for a time as a tonic for the stomach. But if amylic or fusel oil, as he states, produces such a craving or habitual sottishness, let even "moderate" tipplers beware.

Report of Medical Officer to Holborn District Board of Works.—The sanitary report of Dr. Gibbon for 1872–73 has been issued in a printed form. He states that the district has been more healthy than it has been since his appointment, although it never has been so densely populated as now. The Holborn death-rate, however, was 0·55 above the general death-rate of the metropolis, but 1·45 below that of all the central districts. The Holborn death-rate for 1872 was 21·95 per 1,000, and for 1871 it was 24·25, the general death-rate for the whole of London in 1872 having been 21·4 per 1,000, against 24·7 in 1871. In respect to constant water supply, the report says:—

"These regulations will involve a considerable expense, and appear to me to be unnecessarily stringent, seeing that the constant supply is not what is generally meant by that term, viz., a constant supply laid on at all times from the main to the tap, but merely a branch pipe to convey water from the pipes of the Company (*i.e.*, without the intervention of a cistern), for the special purposes of drinking and cooking, from a 'screw down' stop-valve inserted into the supply-pipe at its entrance into the premises. As the constant supply is to be controlled by a stop-valve at the entrance to each and every house, I think the existing fittings might be used in the first instance. In a sanitary point of view, many of the proposed regulations are excellent. All butts, except such as have metallic linings, are to be abolished; cisterns are to be provided to all closets, &c. It is to be hoped that a water waste-preventer will satisfy this requirement."

St. Oswald's Almshouses, Worcester.—The chief stone of a series of new almshouses in connexion with St. Oswald's Charity, to take the place of the old buildings, has been formally laid in the presence of the mayor, the sheriff, the recorder, the under-sheriff, and a considerable attendance of the general public. The buildings are but the beginning of a scheme for the entire re-erection of the hospital, chapel, and almshouses, which is estimated to cost from 20,000*l.* to 30,000*l.* This portion of the scheme involves the erection of 37 almshouses,—19 upon one side of the entrance and 18 upon the other,—and the foundations have been dug out for 18 of these buildings. With the portion in course of erection will be erected a new entrance-porch of suitable design. The almshouses will consist of a living-room, a sleeping-room, a coal-place, pantry, and the necessary sanitary accommodation. The buildings will be in the Gothic style of architecture, and will be two stories in height; the material, bricks with Bath-stone dressings. The buildings now in the course of being erected will cost about 7,000*l.* Mr. Rowe, of Worcester, is the architect, and Messrs. Collins & Cullis, of Tewkesbury, the builders.

Strange Accident at an Ancient "Barrow."—An appalling catastrophe has happened near Helston, West Cornwall. Three men went to a barrow or ancient heap of stones, to gather building materials, when suddenly the ground opened beneath them, and two of the men fell down 240 ft., into forty fathoms of water, along with many tons of surface earth. The covering of an old mine-shaft had given way with their weight. Attempts were made to reach the bodies, but nothing could be done.

The Alarming Outbreak of Fever near Preston.—The Preston rural sanitary authority has met to consider the outbreak of fever at Middleforth Green, near Preston. The result of the investigations made has been a discovery that in the house where the fever first broke out an old man died, a short time ago, of diarrhœa, and several on the premises were soon afterwards attacked by typhoid fever. Four persons are now suffering from the disease in this house. A quantity of offensive matter was found lying in front of the house, within a few yards of the door, and an open drain ran through the garden. The water which the residents used for domestic purposes was obtained from an open ditch, the overflow from an adjacent pond. The pool that formed the water-supply for these premises was situated close to a pig-stye. Dr. Spencer, the medical officer for that district, reported five fresh outbreaks. One of the cases was directly attributable to a person drinking of the stream adjoining Kay's premises. It was resolved that the nuisance inspector immediately order the removal of all nuisances observed in the district.

Completion of the Restorations of Worcester Cathedral.—At a recent meeting of the Restoration Committee, great satisfaction was expressed at the progress made by Messrs. Wood & Son with the works, and it has now been decided that the opening services on the completion of the restoration shall take place on Wednesday, Thursday, and Friday in Easter week, should circumstances prove favourable. It was announced that Earl Dudley would present the Dean and Chapter with a costly pulpit, designed by Sir Gilbert Scott, in conformity with the architecture of the cathedral; the carving to be executed by Forsyth, of London. The material will be marble and alabaster. Lord Dudley will also give a number of carved oak benches, to be placed in the eastern half of the nave. These benches have also been designed by Sir Gilbert Scott, to be erected by Messrs. Wood & Sons, and carved by Messrs. Farmer & Brindley.

Sanitary Report on St. Mary Abbott's, Kensington.—The annual report on this parish during 1872, by T. Orme Dudfield, M.D., medical officer of health, has been issued in a printed form. In speaking of licensed slaughter-houses, Dr. Dudfield rightly regards public abattoirs as the most satisfactory; but should the select committee of the House of Commons, under whose consideration the subject is, decide on retaining the present system, he will consider it his duty to recommend the vestry to oppose the relicensing of some of the private slaughter-houses at present in existence. He questions whether it would not be economical and advisable to appoint a special inspector to superintend the execution of the dust contracts, which are a perpetual cause of complaint and trouble. Among the principal sanitary wants of the parish, he still has to include a disinfecting chamber and a mortuary.

Building and Bye-laws in Brighton.—The subject of the Rev. Arthur Wagner's new church in Ann-street, which is said to contravene the bye-laws as to open space, has been reported on by a committee, who were of opinion that, had the original plans sent in by Mr. Scott shown a building of the great height which it had reached, the council would probably have insisted on more open space in rear or at the side for ventilation, but the council having in effect decided that the height of the building should not be reduced, and it being now impossible to increase the amount of open space, it did not appear to the committee that there was any other ground of objection to the plans, which the committee now submitted for the order of the council. After some discussion, the report was adopted and entered on the minutes of the council's proceedings. Some dissatisfaction is manifested by inhabitants.

The Late Mr. Evan Thomas.—We hear with much regret of the death of Mr. John Evan Thomas, late high sheriff of Breconshire. Mr. Thomas was a sculptor by profession, and was a pupil of Sir Francis Chantrey. Among his works are a colossal bronze statue of the late Marquis of Bute at Cardiff; a statue of the Duke of Wellington, on the Bulwark, Brecon; the statue of the second Lord Londonderry; and the statue of the Prince Consort, erected on the Castle-hill, Tenby. In the earlier part of his career he resided near London, and we can speak, from personal knowledge, of his good qualities as a man.